Panasonic

Data Logger Light

User's Manual

ARCT1F514E-8

2015.10 | panasonic.net/id/pidsx/global

Cautions for Your Safety

Read the manual carefully before installing, running and maintenance for proper operation. Before using, master the knowledge of the equipment, safety information and all of other notes.
This manual uses two safety flags to indicate different levels of danger.

WARNING A handling error could cause serious physical injury to an operator and in the worst case could even be fatal.

- Always take precautions to ensure the overall safety of your system, so that the whole system remains safe in the event of failure of this product or other external factor.
- Do not use this product in areas with inflammable gas. It could lead to an explosion.
- Exposing this product to excessive heat or open flames could cause damage to the lithium battery or other electronic parts.

CAUTION A handling error could cause serious physical injury to an operator or damage to the equipment.

- To prevent abnormal exothermic heat or smoke generation, use this product at the values less than the maximum of the characteristics and performance that are assured in these specifications.
- Do not dismantle or remodel the product. It could lead to abnormal exothermic heat or smoke generation.
- Do not touch the terminal while turning on electricity. It could lead to an electric shock.
- Use the external devices to function the emergency stop and interlock circuit.
- Connect the wires or connectors securely. The loose connection might cause abnormal exothermic heat or smoke generation.
- Use class D earth for protective terminal(F.G.).
  If not, it might get a shock.
- Do not allow foreign matters such as liquid, flammable materials, metals to go into the inside of the product. It might cause exothermic heat or smoke generation.
- Do not undertake construction (such as connection and disconnection) while the power supply is on.

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Specifications are subject to change without notice.

Introduction

Thank you very much indeed for purchasing
“Data Logger Light”.
In this manual, we explain the hard constructions, wiring and maintenance.
Please use it correctly after understanding the content enough.

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Cautions before using

■ Installation environment (Use within the normal specifications.)

・Ambient temperature: -10 to 50 °C.
・Ambient humidity: 30 to 85 % RH (at 20℃, non-condensing)
・Pollution degree: 2
・Keep the height below 2000m.
・Do not use in the following environments.
-Where the unit will be exposed direct sunshine
-Where sudden temperature changes causing condensation.
-Where inflammable or corrosive gas might be produced.
-Where the unit will be exposed airborne dust, metal particles or saline matter.
-Where organic solvents such as benzene, paint thinner, alcohol, or strong alkaline solutions such as ammonia or caustic soda might adhere to the product
-Where direct vibration or shock might be transmitted to the product, and where water might wet the product
- Where high-voltage line, high-voltage device, power line, power supply device or the device with sending part such as amateur radio are existed, or large switching surge is occurred. (Min.100mm)

■ Installation

・Installation and wiring must be performed by expert personnel for electrical work or electric piping.

■ Static electricity

・Discharge static electricity touching the grounded metal etc. when you touch the unit.
・Excessive static electricity might be generated especially in a dry place.

■ Unit's case

Although fire-retardant resin is used for the main case, do not install at the side of flammable item. In addition, do not place on the flammable item.

■ Power supplies

・If using a power supply without a protective circuit, power should be through a protective element such as fuse.

・If an incorrect voltage is directly applied, the internal circuit may be damaged or destroyed.

■ Before power on

Please note the following points when turning on power at the first time.
・Confirm there are neither wiring rubbish nor especially an electrical conduction when installed.
・Confirm neither the power supply wiring and the power-supply voltage are wrong.
・Tighten the installation screw and the terminal screw surely.
・Set RUN/STOP mode change switch to STOP.

■ Request concerning setting parameters storage

To prevent the accidental loss of setting parameters, the user should consider the following measures.
To avoid accidentally losing setting parameters, destroying files, or overwriting the contents of files, created setting files should be backed up or the contents should be printed out and then saved.
The password setting is designed to avoid settings being accidentally changed. If the password is forgotten, however, it will be impossible to change the settings. When specifying the password, note it in the specifications or in another safe location in case it is forgotten at some point.

■ Precautions on using networks

・If the product is used with networks for the applications which might lead to death or financial loss, it is recommended that you should take safety measures on designing the system, and by conducting double circuits and so on.

・This product supports various network connections such as internet, intranet or telephone network, however, we have no responsibility for the delay or inability of the operation caused by the failures of terminal equipments, communication service by telecommunication carriers or interruption of network, or errors in transmitting means, which are not our responsibility.

・If you make up system using various networks such as internet, intranet or telephone network, it is recommended to take measures for protecting against information leak, interception and unauthorized access according to your network and application.

・Identification is necessary with a user name and password to gain access to this unit. Change the user name and password regularly in order to prevent the information from leaking.

・We do not accept liability for the following cases.

1) Guarantee for any kind of damages to the things/products, caused by physical defects of the product.
2) When the other conditions than the ones specified in these specifications exist for handling, storage and transportation of the product after the delivery.
3) When damage is caused by the unpredictable phenomena with the technique that was practiced before the product delivery.
4) When damage is caused by natural disasters such as an earthquake, flood, fire, war and artificial disasters.
5) When necessary countermeasures are not taken to establish a system despite the precautions described in this specifications.

■Cautions

・When it power on first time or it turns off power and battery for long time, initialize the internal memory (push rest switch for 5 seconds or more) before write setup data to Data Logger Light. And set time with calendar timer setup for using logging function.

・When transmitting setup data to Data Logger Light, take care not to overwrite the setup.

・When using the internal memory, be sure to connect backup battery.

Chapter 1 Unit's Features and Structure

1.1 Unit's name and Model numbers

1.1.1 Main unit

Product name	Model No.
Data Logger Light	AKL1000

1.1.2 Options

Product name	Description	Model No.
FP0 mounting plate (Slim type) (10pcs.)	Mounting plate to mount on a panel vertically.	AFP0811
FP0 mounting plate (Flat type) (10pcs.)	Mounting plate to mount on a panel horizontally.	AFP0804
Battery for FPΣ (attached)	Required for storing collected data and holding the calendar timer function	AFPG804
Terminal driver	Use to wire the terminal (Phoenix)	AFP0806

1.1.3 Software

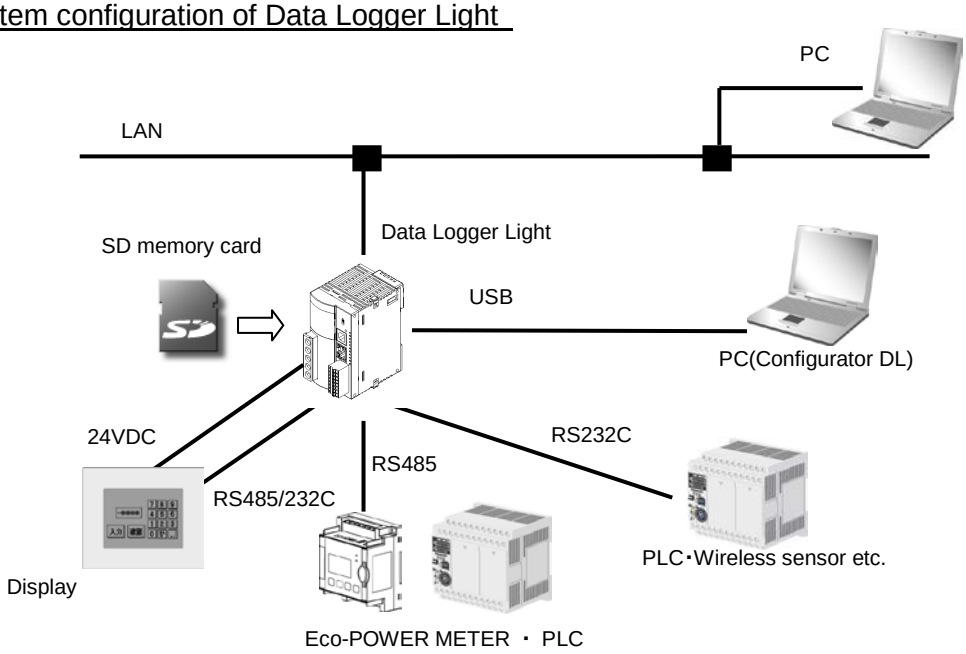
Name	Description	Remarks
Configurator DL *1	Setup software	Free of charge
Configurator WD *1	Tool for searching IP address (Ver.1.50 or more)	Free of charge
SD Formatter *2	Tool for format SD memory card	Free of charge

*1 You can download from our website.(http://www3.panasonic.biz/ac/e/index.jsp)
(Member registration is necessary, free of charge.)

*2 You can download from Panasonic HP. (Member registration is not necessary, free of charge.)

1.2 Unit's Features

1.2.1 System configuration of Data Logger Light



1.2.2 Features of Data Logger Light

Data Logger Light has 3 features.

1) ALL in One

Data Logger Light has AC free power supply and communication port (RS232C/RS485) inside, therefore it is possible to save wiring or installing process.
It is possible to use without SD memory card by using internal memory (SRAM).

Note
Internal memory (SRAM) can be used up to 1MB.

Reference
<4.1 SD memory card>

2) Data collecting and logging

Data Logger Light can collect and log relay status (Inst.value (ON/OFF)), accumulated ON time, register value (Inst.value, Ave.value etc.) and so on.
Logging data can be saved in the internal memory (SRAM) or SD memory card as csv.

3) Setup software "Configurator DL"

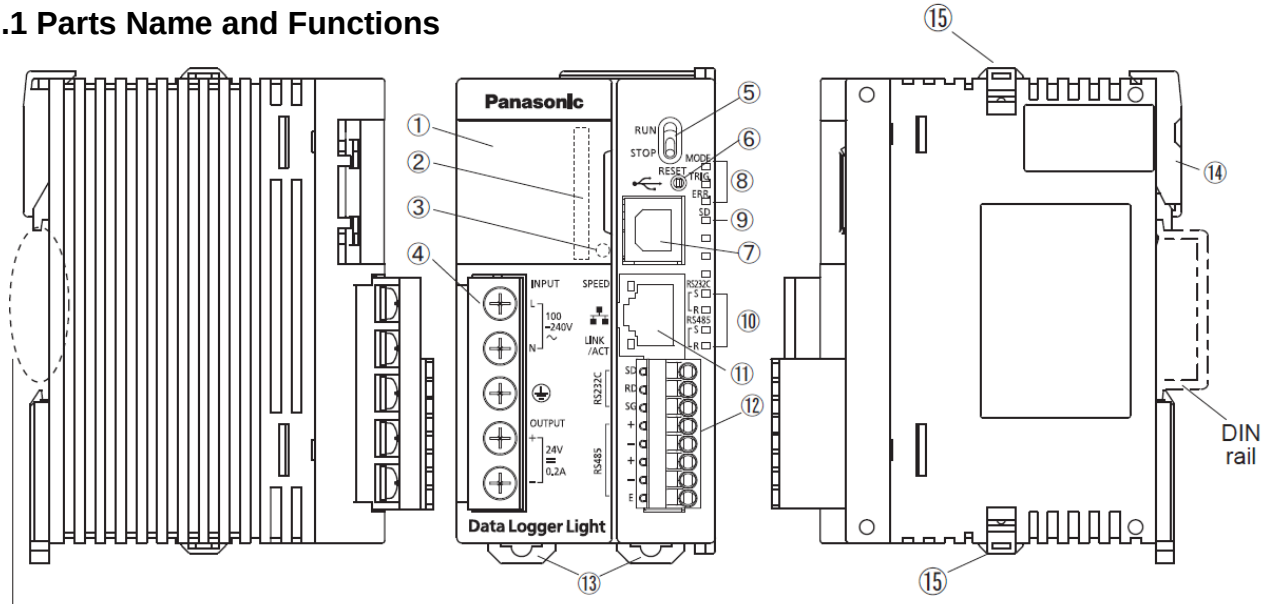
Data Logger Light can be set with PC by using "Configurator DL".
Setup data can be written and read only by connecting PC and Data Logger Light with USB cable.

Note
In order to use USB, USB driver is necessary.

Reference
<Chapter 6 Setup Procedure of Configurator DL>

Chapter 2 Parts Name and Functions

2.1 Parts Name and Functions



note) Never open the connector at the back at it is for the system.

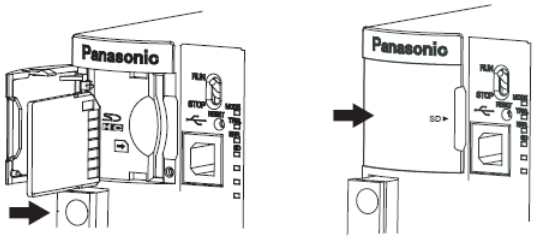
①SD memory card cover

Open SD memory card cover to insert or remove SD memory card.
After inserting SD memory card, close the cover. If the cover is not closed correctly, it can't access SD memory card and can't read nor write.
*When removing SD memory card, open the cover and confirm that the access LED lights off.

②SD memory card slot

Insert SD memory card.

*Be sure to the direction when inserting.
If it is inserted with wrong direction, the unit or SD memory card may be broken.



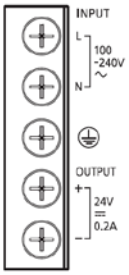
③SD memory card access switch

The switch is ON by closing SD memory card cover and it becomes to access to SD memory card.

*The switch is possible to set ON/OFF by "Configurator DL".

④Power supply connector/ Service power supply connector

■Power supply connector
Supply 100 to 240VAC.
■Service power supply connector
It can use at 24V DC (0.2A).



L	INPUT 100～240V AC
N	
F.G.	Frame Ground
+	OUTPUT 24V DC 0.2A
−	

Note
Do not supply 100 to 240V AC to service power supply connector (24V DC).

⑤RUN/STOP mode change switch

It changes the working mode of Data Logger Light.

Switch	Mode
RUN (top)	RUN mode :Collecting and logging data
STOP (bottom)	STOP mode: Stop collecting and logging data

*You can change RUN/STOP mode by “Configurator DL”.

⑥Reset switch

Use to initialize all setup.
Push reset switch for 5 or more seconds during power on, and setup data and measurement data are initialized.

Note
Do not push the reset switch strongly. It might be broken.

⑦USB port (for USB 2.0)

Connect USB cable.
Use to connect to PC for using “Configurator DL”.

⑧Status indicator LED

It shows the working status of Data Logger Light.

⑨SD access indicator LED

It shows the status of access to SD memory card.

⑩Communication status indicator LED

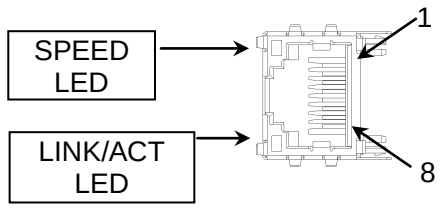
It shows the communication status of RS232C/RS485.

LED			Status of LED and working	
⑧	MODE (Green)		Lights	RUN mode: Collecting and logging data
			Flashes	STOP mode: Stop collecting and logging
	TRIGGER (Green)		Lights	Trigger occurs
	ERROR (Red)		Lights	Error occurs
			Flashes	
⑨	SD (Green)		Lights	Inserting SD memory card
			Flashes	Accessing to SD memory card
			OFF	SD memory card is not inserted.
	Vacant			
⑩	RS232C	S (Green)	Flashes	Transmitting data
		R (Green)	Flashes	Receiving data
	RS485	S (Green)	Flashes	Transmitting data
		R (Green)	Flashes	Receiving data

⑪Ethernet connecting connector (RJ45)　Communication status LED

Use for Ethernet communication.

100BASE-T/10BASE-TX　RJ45 connector



Pin No.	Signal
1	TX+
2	TX-
3	RX+
4	No use
5	No use
6	RX-
7	No use
8	No use

・Initial value

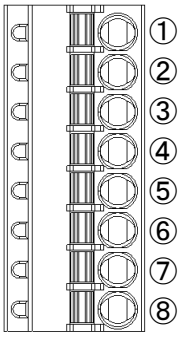
IP address	192.168.1.5
Subnet mask	255.255.255.0
Default gateway	192.168.1.1

・Status of LED and working

LED	Working	Status	Working status
SPEED LED (top)	Shows communication speed	Lights	100BASE communication
		Flashes	10BASE communication
LINK/ACT LED (bottom)	Shows communication status	Lights	Linking
		Flashes	Transmitting/Receiving data

⑫Communication terminal

Use to connect serial communication RS232C/RS485.



No.	Functions	
①	RS232C	SD
②		RD
③		SG
④	RS485	+
⑤		−
⑥		+
⑦		−
⑧		E

⑬DIN hook

Install to DIN rail by one-touch.
Use to install to the mounting plate slim type (AFP0811).

⑭Battery cover

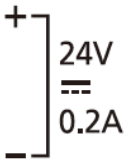
Remove this cover in order to install the attached backup battery.
Using the battery can backup calendar timer and internal memory data.

Reference
<5.3 Install and Setup of Backup Battery>

⑮Hook

Use to mount and fix FP0 mounting plate flat type (AFP0804).

2.2 Symbol List

Symbol	Explanation
	USB connector
	SD memory card slot
	Ethernet connector
	AC Voltage
	Protective earth
	+ DC Voltage plus ⎓ DC Voltage – DC Voltage minus
	+ RS485 plus – RS485 minus

Chapter 3 Communication Specifications

3.1 Communication specifications

a) Interface: Ethernet communication

Item		Specification
Interface		IEEE802.3u,100BASE-T/10BASE-TX
Connector shape		RJ45
Transmission	Transmission speed	100Mbps / 10Mbps
	Transmission method	Base band
	Max. segment length	100m
Transmission cable		UTP (Category 5)
Protocol		TCP/IP
Functions		Auto-negotiation MDI / MDI-X Auto-crossover

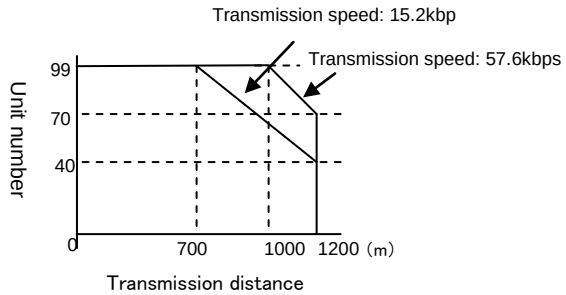
b) Interface: RS232C, RS485

Item		Specification	
Interface		RS232C	RS485
Transmission type		1:1	1:N
Connected number		1	99 *1 *2
Communication method		Half-duplex	
Synchronous method		Asynchronous communication method	
Transmission distance		15m	Max. 1200m *3
Transmission speed		4800,9600,19200,38400,57600,115200bps	
Transmission format	Data length	7bit / 8bit	
	Parity	Odd / Even / None	
	Stop bit	1bit / 2bit	
Protocol		MEWTOCOL, MODBUS(RTU)	

*1 In case of using PC as a slave, we recommend SI-35 and SI-35USB (from LINE EYE Co., Ltd.).

*2 When using SI-35, SI-35USB or PLC from our company (which can be connected up to 99 units), up to 99 Eco-POWER METER can be connected. In case using this system with the other devices, up to 31 Eco-POWER METER can be connected.

*3 Transmission distance is limited as below according to transmission speed and connected unit number. Under 38400bps, maximum distance is 1200m and maximum unit is 99 units.

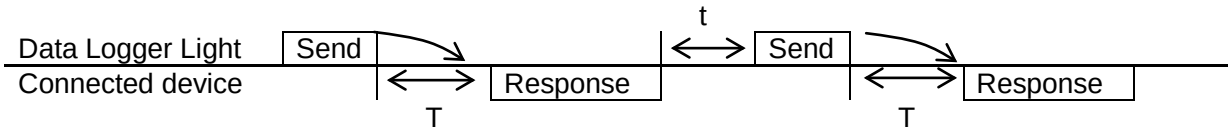


*4 MEWTOCOL is received with port of 9094 and 9095. (Port number can be changed by setting.)

*5 In case of that the unit No. is “%EE”, Data Logger Light is the target.

3.2 Caution for RS485 communication

When Data Logger Light communicates with RS485, Data Logger Light occupies communication line for a period after sending data.
Start sending to Data Logger Light after passing the below time by receiving device.



Condition of “t”

Communication condition	T
4800bps	4.2ms or more
9600bps	2.1ms or more
19200bps	1.1ms or more
38400bps	0.6ms or more
57600bps	350μs or more
115200bps	200μs or more

Some of our PLCs have SYS1 command that enables to change time after receiving a command until a response is returned.
*When it can’t communicate, it will retry one time with setting retry time.

Reference
<FP Series Programming Manual ARCT1F313E>

Chapter 4 Memory Specifications

4.1 SD Memory Card

SD memory card I/F specifications

Item	Specifications
Slot	SD and SDHC
Capacity	Max. 32GB
Speed class	Class2 to Class10
Format type	FAT, FAT32

*If it breaks down during writing, there is a possibility that the data is damaged.
We recommend using UPS (uninterruptible power system).

Note

・It does not recognize SD memory card with 32GB or more capacity.
・In order to format SD memory card, use Panasonic format software.
You can download from Panasonic website.
File system of SD memory card formatted by PC's software is not supported SD memory card standard generally.

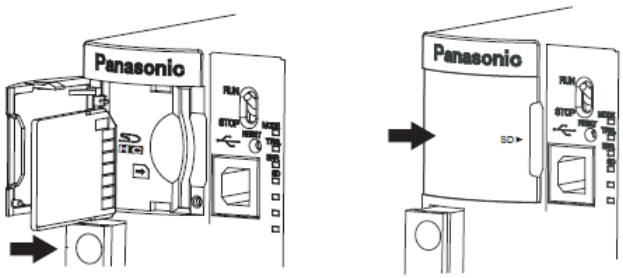
■Confirmation of the working

We confirmed the working of the below SD memory cards, however, it is not guaranteed all workings,

Manufacturer	Capacity	Part number
Panasonic	2GB	RP-SDF02G RP-SDF02GCD1
	4GB	RP-SDF04G RP-SDF04GCD1
	8GB	RP-SDF08G RP-SDF08GCD1

(As of February 2014)

■Insert and remove SD memory card



・After inserting SD memory card, be sure to close the cover.
If the cover is not closed, it will cause the access error and can't read nor write SD memory card.
・Opening the cover and turn on the access LED, remove SD memory card.
(It accessed SD memory card during flashing the LED.)
*It can be set the switch's working by using "Configurator DL".

[Guide of saved file number]

Connect 99 units　15 min.cycle logging　1 file per 1 day → about 80KB

SD memory card capacity	File number
2GB	About 26,214 files
4GB	About 52,428 files
8GB	About 104,857 files
32GB	About 419,430 files
1MB (internal memory)	About 12 files

Note

- **The file number is decreased according to capacity of "System.csv" and "Trigger.csv".**
- **While SD access LED is blinking, do not remove SD memory card. It might damage data in SD memory card and SD memory card.**
- **The　max saving file number differs according to the using conditions.**

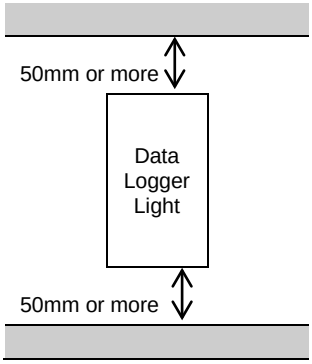
Chapter 5 Installation and Wiring

5.1 Installation

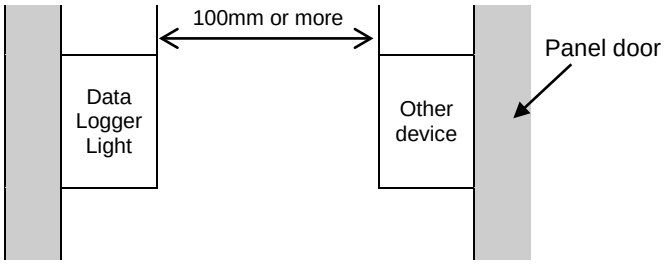
5.1.1 Install space

■Panel installing space

・Leave at least 50 mm of space between the wiring ducts of the unit and other devices to allow heat radiation and the unit replacement.



・Keep at least 100mm of space between devices to avoid adverse affects from noise or heat when installing a device or panel door to the front of the unit.
Leave at least 100mm of space from the front surface of the unit in order to allow room for wiring.

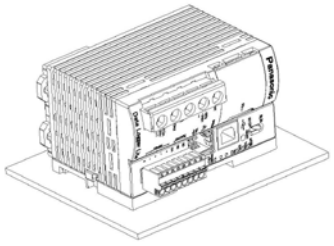


・Do not install on the top of the devices with high heat generation such as heater, transformer, high-capacity register and so on.

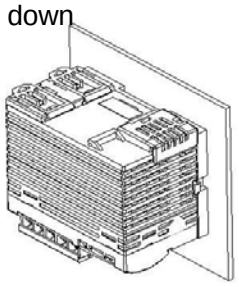
■For heat discharge

・Do not install the unit as shown below.

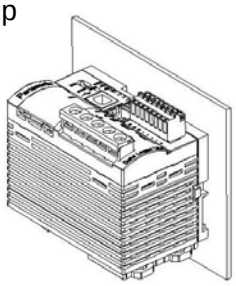
Horizontal



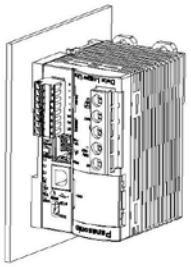
Face down



Face up



Upside-down



5.1.2 How to install

■**Attach to DIN rail and remove from DIN rail**

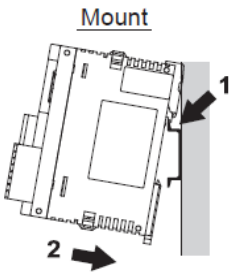
You can attach to DIN rail by one-touch.

How to install

①Fit the upper hook onto DIN rail.

∗Check that DIN hook is set to DIN rail completely .

②Press on the lower hook without moving the upper hook.

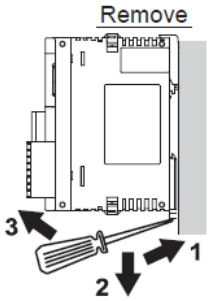


How to remove

①Insert a flathead screwdriver to DIN hook.

②Pull down the DIN hook.

③Lift up the unit and remove from the rail.



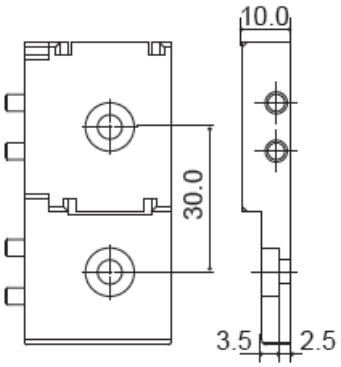
Note

Be sure to fix by 2 points of DIN hooks.

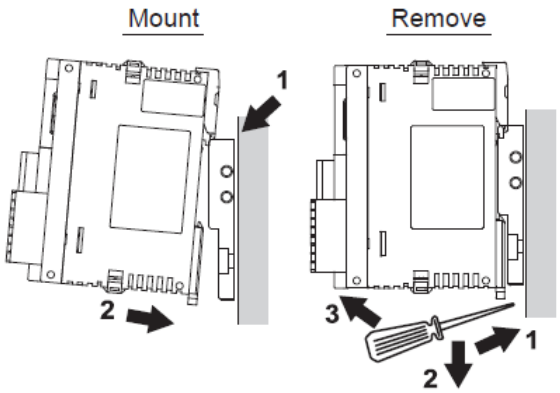
5.1.3 Installation by using optional mounting plate

■**When using FP0 mounting plate slim type (AFP0811)**

Use M4 size screws and install according to the below dimensions.



The rest of procedure is the same as to attach to DIN rail.



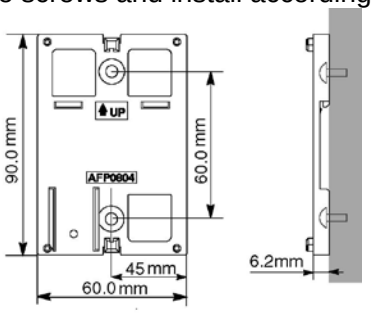
Note

It can mount with one mounting plate.

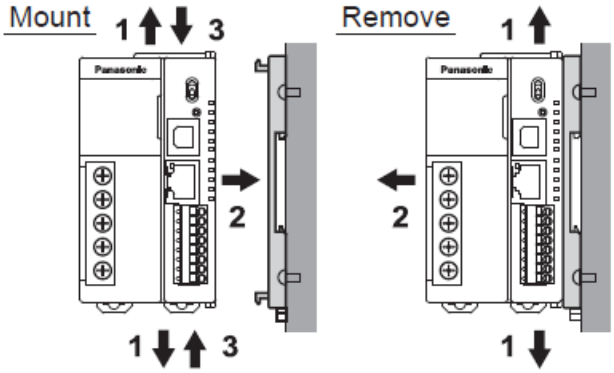
Mount to DIN hook of left side from the back.

■When using FP0 mounting plate flat type (AFP0804)

Use M4 size screws and install according to the below dimensions.



Raise the expansion hook of the unit. Align it with the mounting plate and press the hooks.



Note

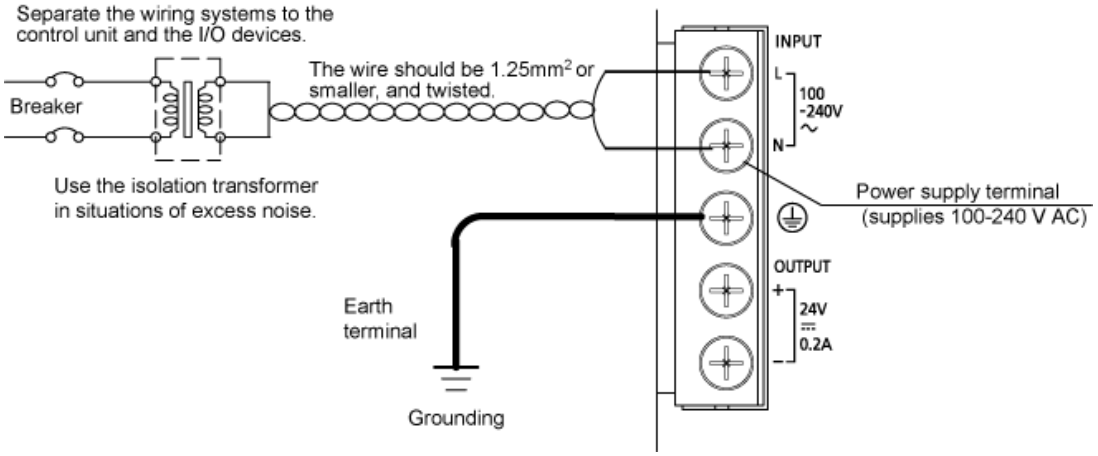
Mounting plate flat type (AFP0804) should be used with only one Data Logger Light.

5.2 Wiring

5.2.1 Wiring of power supply

■Wiring of power supply

Be sure to wire correctly according to the terminal arrangement and wiring diagrams.
After completing wiring, be sure to attach the terminal cover for safety reasons.



Check that the connected power supply voltage is in the range of the allowable power supply.

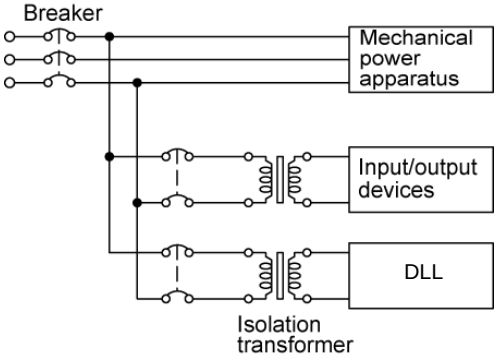
Rated input voltage	Allowable voltage	Rated frequency	Allowable frequency
100 to 240VAC	85 to 264VAC	50/60Hz	47.5 to 63Hz

Note

・To add voltage or frequency out of specification range or to use wire that is not allowable cause damage to power supply.
・Do not connect AC power supply 100-240V to service power supply terminals.

■Isolate power supply system

Isolate the wiring system to Data Logger Light, input/output devices, and mechanical power apparatus.

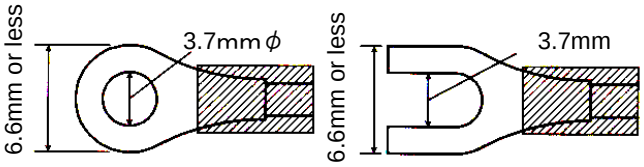


To avoid the effect from noise

Use power supply that has little noise. The inherent noise resistance is sufficient for power supply superimposed noise. However, we recommend decreasing noise by using insulated transformer.
In order to decrease influence from noise, use twist cable for power supply.

■Power supply terminals

1) Terminal fastening torque should be 0.8 to 1.0N･m. In case of using a crimping terminal, use it with insulating sleeve applicable to M3.5.



2) To protect the devices, it is necessary to install power switch and circuit breaker in the power supply circuit.
3) We recommend a wire with the cross section of 0.75 to 1.25 mm^2 and the length of 10m or less for power supply line and service power line.

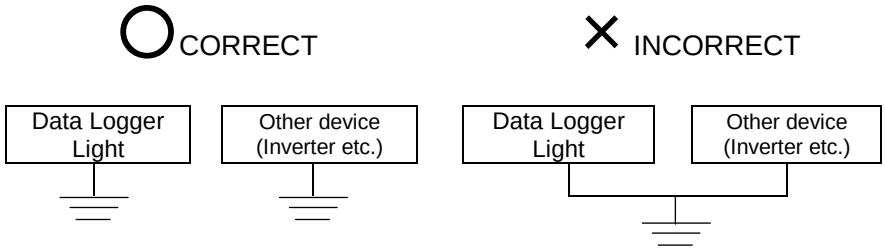
5.2.2 Grounding

■In case of excess noise

Under normal conditions, the inherent noise resistance is sufficient. However, in case of that it is used under the excess noise, ground the unit to increase noise suppression.

■Exclusive grounding

- For grounding purposes, use wire with the cross section of 2.0mm^2 or more and the resistance of less than 100Ω.
- The grounding point should be as close to Data Logger Light as possible. And the grounding wire should be as short as possible.
- If the ground point shares with the other device, it may occur an adverse effect. Always use an exclusive ground for each device.



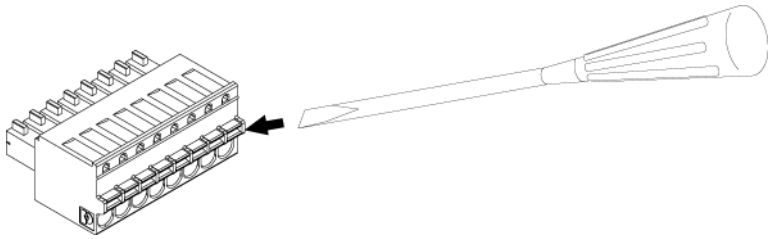
5.2.3 Wiring of terminal block

■How to wire

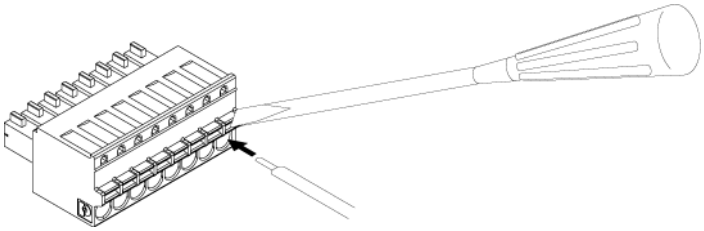
① Remove wire's insulation.

9mm(±1mm)

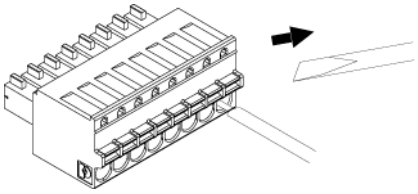
② Press orange switch of terminal block with an screwdriver.



③ Insert wire into the terminal block until it reaches the back of the block with pressing the switch.



④ Remove the screwdriver from the switch.



■Notes for wiring

Take care not to break wire.

・When removing wire's insulation, take care not to scratch core wire.
・Do not twist the wires to connection.
・Do not solder wire to connect them. Soldering may break due to vibration.
・After wiring, do not make stress to the cable.

■Attached terminal block socket

The terminal block manufactured by Phoenix Contact is used.

Number of pin	Phoenix Contact Model No.	
	Model No.	Product No.
8-pin	FK-MCP1,5/8-ST-3,5	1939963

Suitable wire (Twisted wire)

Size	Nominal cross-sectional area
AWG#28 to 16	0.14mm^2 to 1.5mm^2

Suitable pole terminal without insulation sleeve

If using a pole terminal, use the following model.

Manufacture	Cross-sectional area	Size	Model No.
Phoenix Contact Co.	0.34mm^2	AWG#22	AI 0,34-12TQ
	2.5mm^2	AWG#14	AI 2,5-12BU

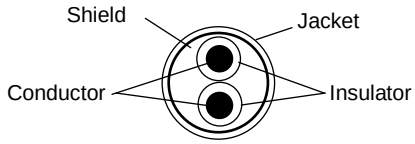
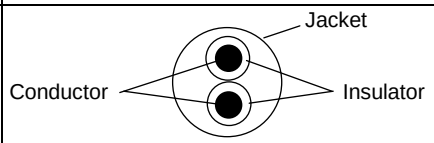
Pressure welding tool for pole terminal

Manufacture	Phoenix Contact Model No.	
	Model No.	Model No.
Phoenix Contact Co.	CRIMPFOX UD 6-4	1205244

■Recommended cable

Use the transmission cables shown below for transmission line.

Cable	Conductor		Insulator		Cable diameter	Applicable cable
	Size	Resistance (at 20℃)	Material	Thickness		
Twisted-pair with shield	1.25 mm^2 (AWG16) or more	Max.16.8Ω/km	Polyethylene	Max. 0.5 mm	Approx. 8.5 mm	HITACHI KPEV-S 1.25 mm^2×1P Belden Inc. 9860
	0.5 mm^2 (AWG20) or more	Max.33.4Ω/km	Polyethylene	Max. 0.5 mm	Approx. 7.8 mm	HITACHI KPEV-S 0.5 mm^2×1P Belden Inc. 9207
VCTF	0.75 mm^2 (AWG18) or more	Max.25.1Ω/km	PVC	Max. 0.6 mm	Approx. 6.6 mm	VCTF 0.75 mm^2×2C (JIS)

Cable	Section
Twisted-pair with shield	
VCTF	

Note

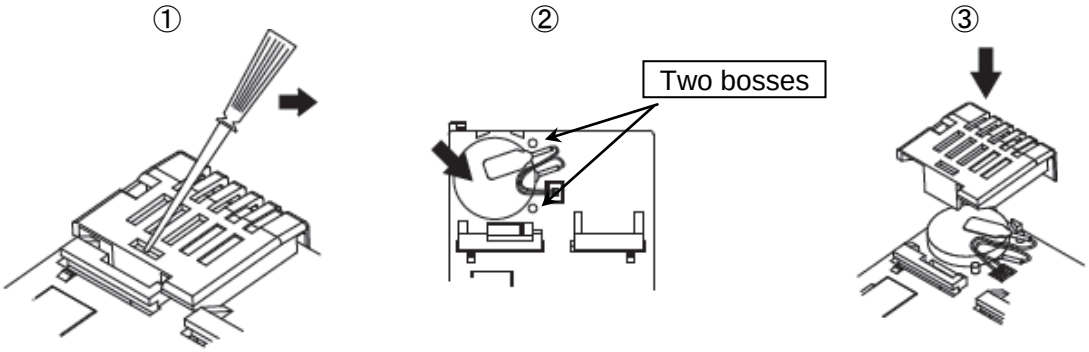
- Use shielded type twist cables.
- Use only one type of the transmission cable. Do not mix the different type of cable.
- Use twist pair cables under a bad noise environment.
- When using shielded cable for RS485 transmission line, ground one end. If it ground both end, it doesn't communicate correctly.
- Use a class D dedicated earth for grounding. Do not share a ground with other earth lines.
- Be sure to connect with daisy chain the RS485 transmission line between each unit. Do not use a splitter.

5.3 Install and Setup of Backup Battery

Installing an optional backup battery (AFPG804) enables to back up calendar timer, logging data and so on.

5.3.1 How to install

①Open the battery cover by using a driver or similar tool.
②Connect the connector and place it between the bosses as to insert the terminals.
③Insert the code between the connector and the battery and attach the battery cover from the top.
*Be careful not to clip code between the cover and case.



Note
When using internal memory or calendar, be sure to install the battery and set the function of check battery voltage by “Configurator DL”. <Configuration-Check battery voltage>

5.3.2 Time for Replace of Backup Battery

Error LED on the unit will flash when the battery voltage is dropped.
Replace the battery as soon as possible because the error LED is not detected immediately.

・When replacing battery, turn off the power after supplying the power more than 30 minutes. After that, replace battery within 2 minutes.
・When the battery is run out, logging data in the internal memory will be undefined and it might initialize the calendar timer.

5.3.3 Life of Backup Battery

It is necessary to replace battery regularly. Refer to the below for a guide of replace time.

Battery life	250 days or more (In actual use: approx. 2 years(25℃)) (Suggested replacement interval: 1 year) (No power is supplied.)

Note
Risk of explosion if battery is replaces by an incorrect type.
When disposing the replacing battery, follow the direction of using area and insulate the battery using tape for terminal part.

5.4 Safety Measures

5.4.1 Safety measures

■Confirm the Grounding

When installing Data Logger Light next to devices that generate high voltage from switching such as inverters, do not ground them together. Use an exclusive ground for each device.

■In order to prevent from electrical shock, be sure to use terminal cover.

5.4.2 Momentary power failures

■Working when momentary power failure

If the period of power failure is less than 10ms, Data Logger Light continues to the working.
In case of that the period is more than 10ms, the working is changed depending on the conditions such as combination of unit, power supply voltage and so on.

Chapter 6 Setup Procedure of Configurator DL

"Configurator DL" is the application software in order to use for setup of Data Logger Light.
There are 3 ways to setup by "Configurator DL".

・Easy-setup : You can setup only selecting logging cycle, Unit No. and connected unit.
(Refer to 6.1.5)
・Wizard : You can setup dialogically. (Refer to 6.1.6)
・Manual-setup : You can setup from the beginning. Therefore you can setup detail.
(Refer to 6.1.7)

6.1.1 How to install

It is necessary to install "Configurator DL" to your PC.

Point

You can download "Configurator DL" from our website.
Member registration is necessary. Free of charge.

■Operating environment

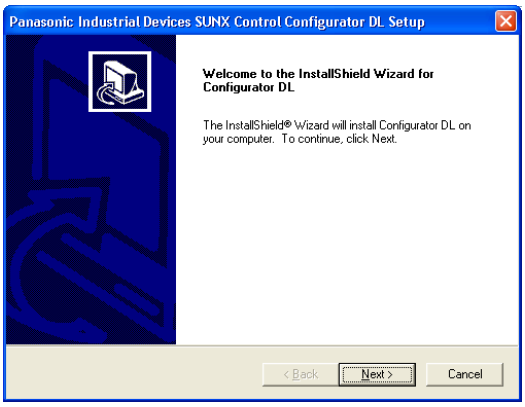
Item	Specification
PC	IBM PC/AT compatible machine
OS (only 32-bit editions)	Windows Vista Business, Windows 7 Professional/Home Premium, Windows 8, Windows 8.1
Required hard disc capacity	10Mbyte (not include the capacity of saving setup data)
CPU	PentiumⅢ 700MHz or more
Loaded memory	512MB or more
Image resolution	1024x768 or more
Display colors	High Color (32-bit or more)
Communication form	USB2.0, LAN

Note

Even if a customer stores a file created by the customer in ¥Program files, the file will be automatically stored in /userID/AppData/Local/VirtualStore.
[When User Account Control (UAC) is on as the default setting of Windows Vista™]

How to install (*This is image of Windows 7.)

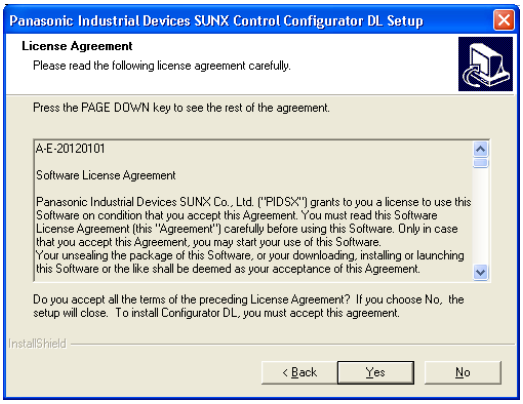
1) Execute setup file (configdl_freev＊＊＊.exe).


Panasonic Industrial Devices SUNX Control Configurator DL Setup
Welcome to the InstallShield Wizard for Configurator DL
The InstallShield® Wizard will install Configurator DL on your computer. To continue, click Next.
< Back
Next >
Cancel

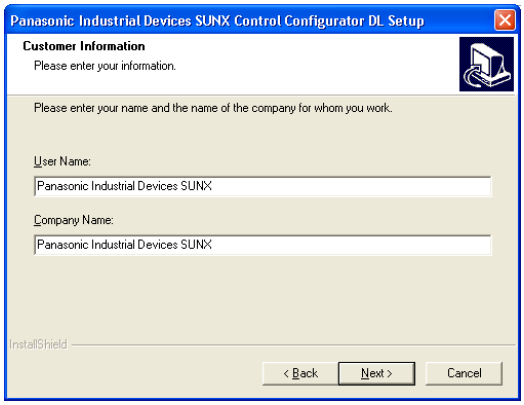
Note

"＊＊＊" in file name means version of the file. Confirm version before downloading from our website. (ex. Ver.100 -> configdl_freev100j.exe)

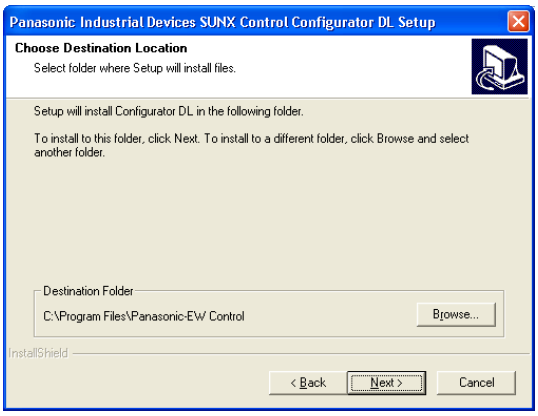
2) Click “Next(N)” and the window below is displayed.
Read license agreement and click “Yes” when you agree.


Panasonic Industrial Devices SUNX Control Configurator DL Setup
License Agreement
Please read the following license agreement carefully.
Press the PAGE DOWN key to see the rest of the agreement.
A-E-20120101
Software License Agreement
Panasonic Industrial Devices SUNX Co., Ltd. ("PIDSX") grants to you a license to use this Software on condition that you accept this Agreement. You must read this Software License Agreement (this "Agreement") carefully before using this Software. Only in case that you accept this Agreement, you may start your use of this Software.
Your unsealing the package of this Software, or your downloading, installing or launching this Software or the like shall be deemed as your acceptance of this Agreement.
Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install Configurator DL, you must accept this agreement.
InstallShield
< Back
Yes
No

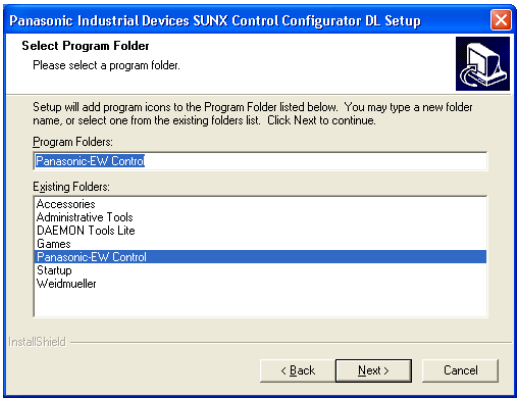
3) Enter user name and company name and click “Next”.


Panasonic Industrial Devices SUNX Control Configurator DL Setup
Customer Information
Please enter your information.
Please enter your name and the name of the company for whom you work.
User Name:
Panasonic Industrial Devices SUNX
Company Name:
Panasonic Industrial Devices SUNX
InstallShield
< Back
Next >
Cancel

4) Specify the install destination and click “Next”.
Initial install folder is “C:¥Program Files¥Panasonic-EW Control”.
If no change, click “Next”. When you’d like to change, click “Browse” and select install destination.
After that, click “Next”.


Panasonic Industrial Devices SUNX Control Configurator DL Setup
Choose Destination Location
Select folder where Setup will install files.
Setup will install Configurator DL in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\Program Files\Panasonic-EW Control
Browse...
InstallShield
< Back
Next >
Cancel

5) Select program folder name.
Initial is “Panasonic-EW Control”. If no change, click “Next.


Panasonic Industrial Devices SUNX Control Configurator DL Setup
Select Program Folder
Please select a program folder.
Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing folders list. Click Next to continue.
Program Folders:
Panasonic-EW Control
Existing Folders:
Accessories
Administrative Tools
DAEMON Tools Lite
Games
Panasonic-EW Control
Startup
Weidmueller
InstallShield
< Back
Next >
Cancel

It starts installing and installs “Configurator DL” to the PC.

6.1.2 How to uninstall

When uninstalling, select “Control Panel -> Add or Remove programs
->Panasonic-EW Control Configurator DL” and remove.

6.1.3 USB Driver

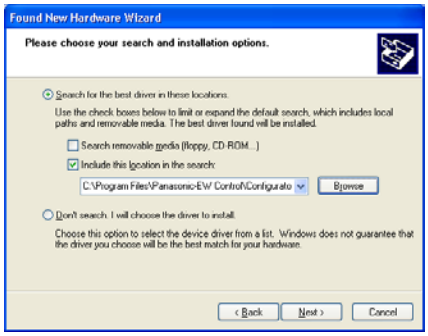
When Data Logger Light is connected to PC and powered on, "Found New Hardware Wizard" will be started on PC.

USB driver name: If you install to the initial destination, you can find in this folder.
C:¥Program Files¥Panasonic-EW Control¥Configurator¥DL¥DLL USB¥DL_VUART.inf
¥ dl_vuart.cat

1) After starting “Found New Hardware Wizard” wizard, check "No, not this time” and click “Next”.

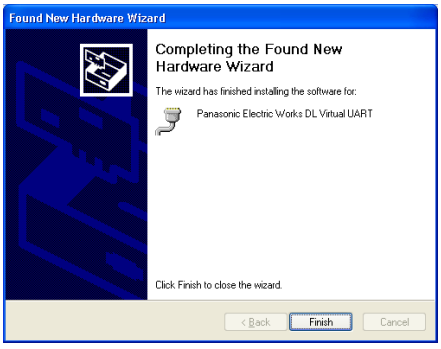
Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

2) Specify the folder saved USB driver.


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
C:\Program Files\Panasonic-EW Control\Configurato
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

3) It starts installing the USB driver.

4) The message below will be displayed and it will complete to install the USB driver.
Click “Finish” to finish.


Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
Panasonic Electric Works DL Virtual UART
Click Finish to close the wizard.
< Back
Finish
Cancel

Note

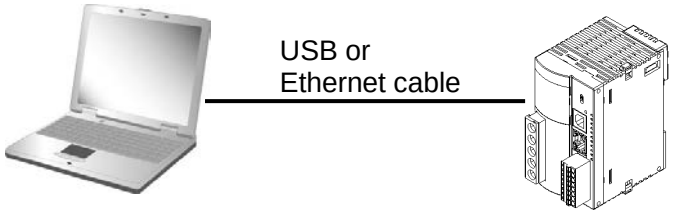
According to the using environment, it may not start wizard automatically.
In this case, select “Control Panel -> System -> Device Manager” and install.
(Check beforehand it may be different according to using OS”)

6.1.4 Before setup

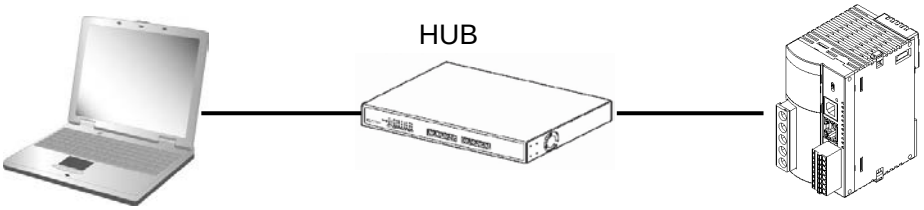
Before setups, do the followings.

1) Connect PC to be used for setups with Data Logger Light.
There are 2 ways to connect.

①Directly connect via USB cable or Ethernet cable.



②Connect via Ethernet cable using HUB.



Note

・When using USB, install the driver attached “ConfiguratorDL”. (Refer to 6.1.3)
・In the case of use, the setting of the personal computer please do not make Configurator DL "a standby mode" or "a sleep mode".

Point

Both of cross cable and straight cable can be used for Data Logger Light to connect Ethernet connector to PC.

2) When it is powered on first time or the power and battery are off for long time, initialize the internal memory (Press and hold the reset switch in power-on state).

Note

Do not push the reset switch strongly. It might be broken.

3) Set time to the unit.

Reference

<7.2.14 Configuration >

6.1.5 Easy-setup

You can setup Data Logger Light by simple setting.

This is the example of the setup procedure for selecting “Connecting unit: Eco-POWER METER”. Refer to <7.2.15 Easy-setup> in detail of Easy-setup such as setup for “Multi-circuit energy checker”, “Multi-circuit energy monitor” and “Multi-circuit energy monitor”

Note
It set only for MEWTOCOL.

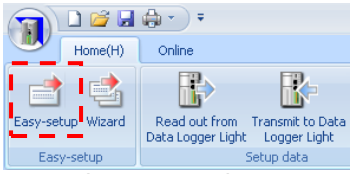
[Setup flowchart]

Start Configurator DL.

Execute “Easy-setup”

Select “Easy-setup” icon.

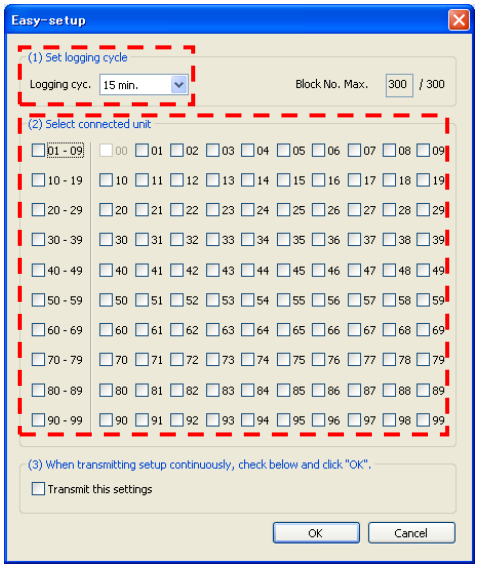
[Top menu]



Can be executed with [Home menu].

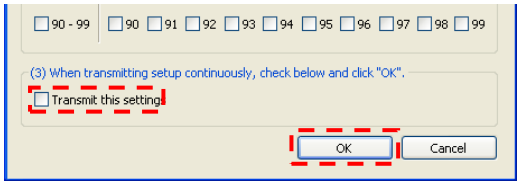
Select “Logging cyc.”

Select Unit No. to use



Transmit settings to Data Logger Light
or
Finish setting

In order to transmit the settings, check box of “Transmit this settings” and click “OK”.
When not transmitting the settings, click “OK” without check.

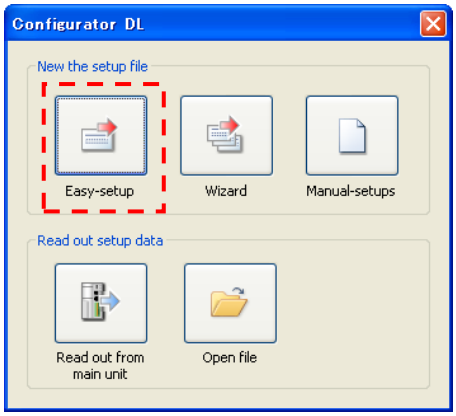


[Setup procedure]

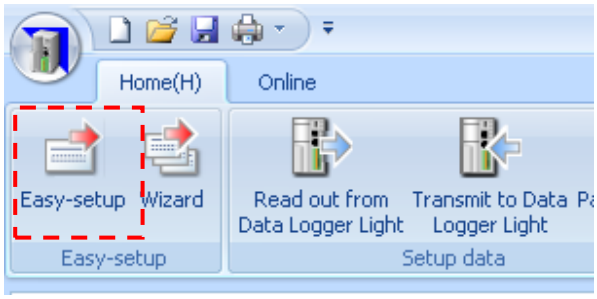
This is the example that Eco-POWER METER is set.

Item	Contents
Logging trigger	15 min cycle
Unit No.	1

1) Click icon of “Easy-setup” in menu.

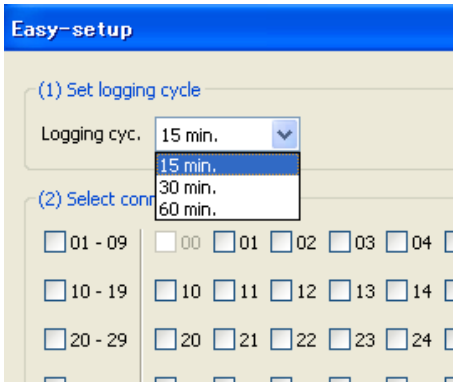


[Top menu]



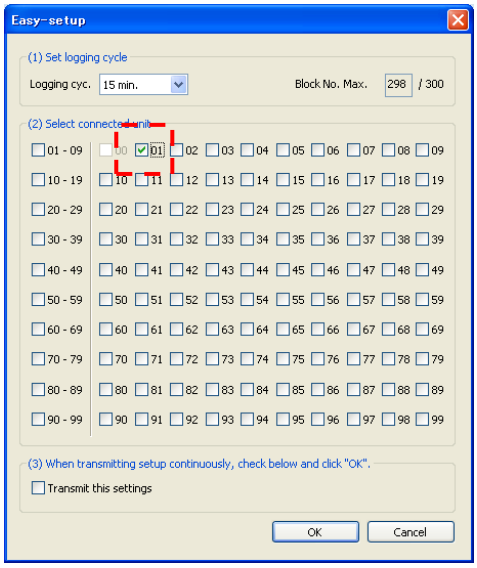
[Home menu]

2) Select logging cycle.



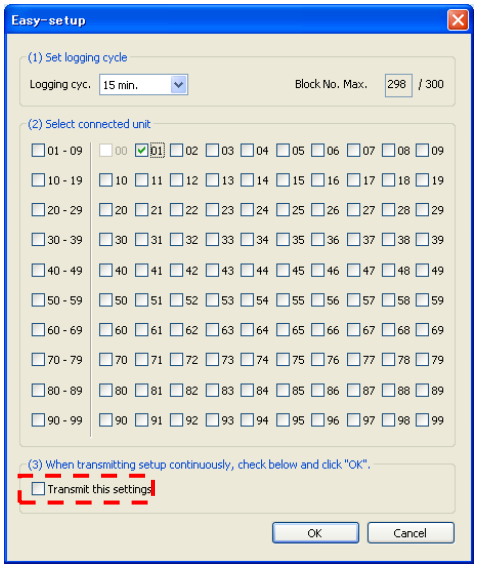
Select logging cycle of collecting data from 15 min., 30 min. and 60 min.
In this example, select 15 min. cycle.

3) Select using unit No.



Set the unit No of Eco-POWER METER connected Data Logger Light.
In this example, check “01”.

4) In order to transmit the settings to Data Logger Light, check box of “Transmit this settings” and click “OK”. When it is not transmitted to Data Logger Light, click “OK” without check.
It shifts to home window of “Configurator DL”.



Reference

As to the transition procedure, refer to <7.2.8 Transmit to Data Logger Light and Read out from Data Logger Light (Access to Main unit)>

Note

When you click “OK” after setup, setup data with “Configurator DL” is cleared. When you don’t want to clear the setup data, save setup data before transmitting the setup.

The items below are set automatically.

Item	Contents	
New file create timing	Everyday 00:00:05	
Logging file 1	Logging file name	Syunji
	Saved file number	60
	Data type	Register
	Device	DT:100 (Integrated electric power)
	Data type	DEC2W(No code)
	Logging contents	Inst.value
	Digit	0
	Conversion value	0.01
	Unit	kWh
Logging file 2	Logging file name	Sabun
	Saved file number	60
	Data type	Register
	Device	DT:100(Integrated electric power)
	Data type	DEC2W(No code)
	Logging contents	Diff.value
	Digit	9
	Conversion value	0.01
	Unit	kWh
Configuration	Make the destination folder name of logging file [CF].	

6.1.6 Wizard setup

You can setup Data Logger Light dialogically.

Note
It set only for MEWTOCOL. You can setup the items except 64 bit integer (DEC4W).

[Setup flowchart]

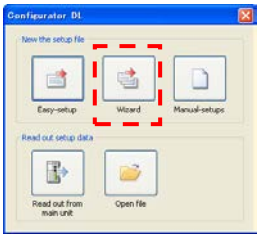
Start Configurator DL.

↓

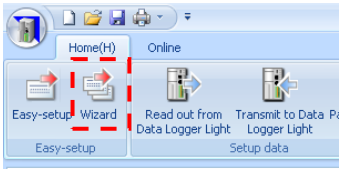
Execute “Wizard”

↓

Select “Wizard” icon.



[Top menu]

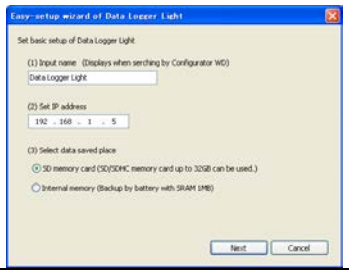


Can be executed with [Home menu].

↓

Step 1

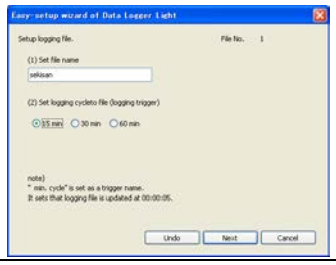
Step 1:
Set name, IP address, and data saved place.


Easy-setup wizard of Data Logger Light
Set basic setup of Data Logger Light
(1) Input name (Displays when serching by Configurator WD)
Data Logger Light
(2) Set IP address
192 . 168 . 1 . 5
(3) Select data saved place
SD memory card (SD/SDHC memory card up to 32GB can be used.)
Internal memory (Backup by battery with SRAM 1MB)
Next
Cancel

↓

Step 2

Step2:
Set logging file name (csv) and logging trigger.



↓

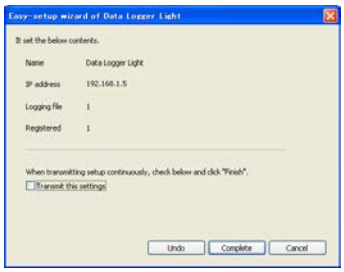
Step 3

Step 3:
Set logging device
*Several devices can be registered if necessary.

Confirmation display of the registered contents

↓

Transmit settings to Data Logger Light
or
Finish setting

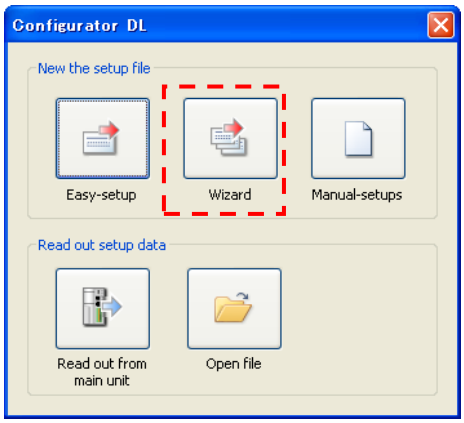


[Setup procedure]

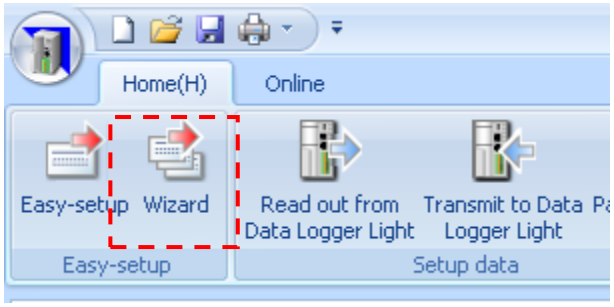
This is the example that Eco-POWER METER is set with the conditions below.
Refer to <7.2.16Wizard setup> in detail of Wizard setup.

Item	Contents
Main unit name	Data Logger Light
IP address	192.168.1.5
Data saved place	SD memory card
Logging file name	sekisan
Logging trigger	15 min. cycle
Logging device name	Integrated electric power
Collecting data	Integrated electric power
Unit No.	1

1) Click “Wizard” icon.

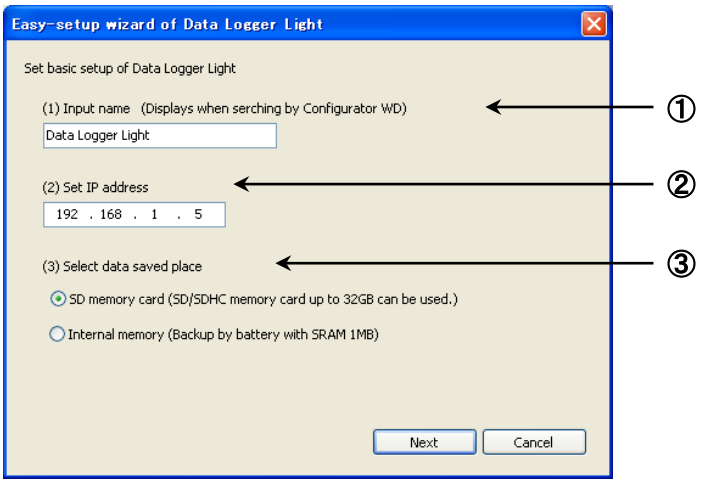


[Top menu]



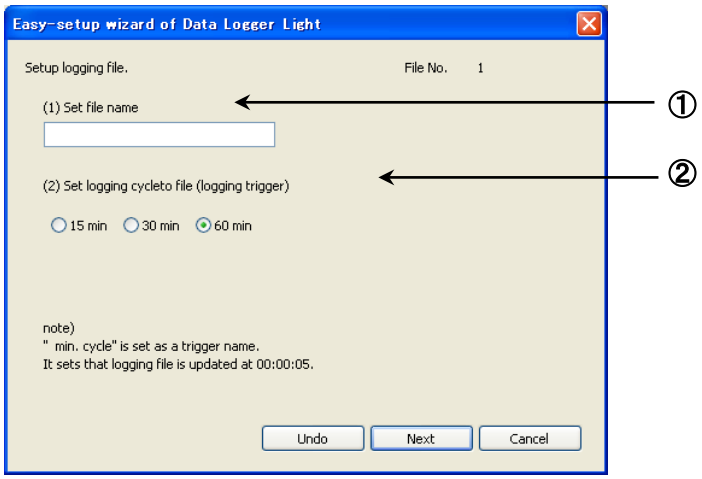
[Home menu]

2) Set basic setup of Data Logger Light.
After completing the input, click “Next”.


Easy-setup wizard of Data Logger Light
Set basic setup of Data Logger Light
(1) Input name (Displays when serching by Configurator WD)
Data Logger Light
(2) Set IP address
192 . 168 . 1 . 5
(3) Select data saved place
SD memory card (SD/SDHC memory card up to 32GB can be used.)
Internal memory (Backup by battery with SRAM 1MB)
Next
Cancel
①
②
③

Item	Contents
① Input name	Data Logger Light
② Set IP address	192.168.1.5
③ Select data saved place	Select “SD memory card”

3) Input setup about logging file.
After completing input, click “Next”.



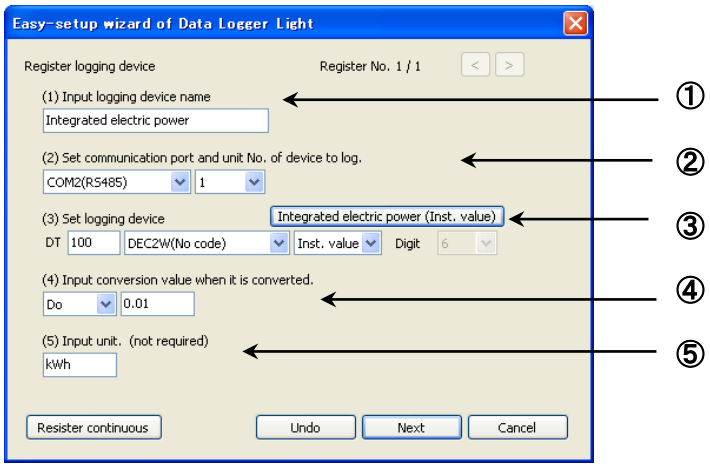
Item	Contents
① Set file name	sekisan *1
② Set logging cycle to file (logging trigger)	Select “15 min”.

Note

*1 It can’t use the below letters.

letter	name	letter	Name
¥	Yen	*	Asterisk
/	Slash	?	Question mark
\	Backslash	“	Double quotation
:	Colon	<	Inequality sign
;	Semi-colon	>	Inequality sign
.	dot	|	pipe
	Half-width space (only the beginning)		

4) Input conditions about logging device.
After completing the input, click “Next”.



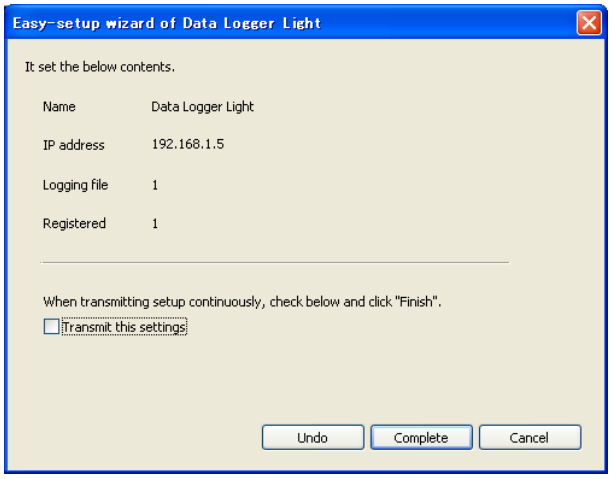
Item		Contents
①	Input logging device name	Integrated electric power *1
②	Set communication port and unit No. of device to log.	Communication port: COM2(RS485) Unit No.: 1
③	Set logging device	DT100 DEC2W(No code) Inst.value
④	Input conversion value when it is converted.	Do 0.01
⑤	Input unit. (not required)	kWh

Note
*1 It can’t use the below letters.

letter	name
,	comma
″	Double quotation

Point
When click “Integrated electric power (Inst. value)”, items of ③④⑤ are input automatically.

5) It displays the setup contents.
In order to transmit the settings to Data Logger Light, check box of “Transmit this settings” and click “OK”. When it is not transmitted to Data Logger Light, click “OK” without check.



Reference
<7.2.8 Transmit to Data Logger Light and Read out from Data Logger Light (Access to Main unit)>

Note
When you click “Complete” after setup, setup data with “Configurator DL” is cleared. When you don’t want to clear the setup data, save setup data before transmitting the setup.

6.1.7 Manual-setups

You can setup Data Logger Unit from the beginning.

[Setup flowchart]

Start Configurator DL.

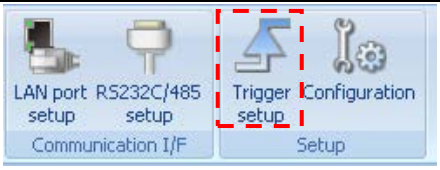
↓

Execute "Manual-setups"

[Top menu]

↓

Set trigger

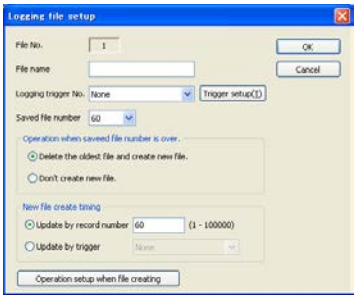


[Home menu]

↓

Set logging file

Select triggers for logging and creating logging file.

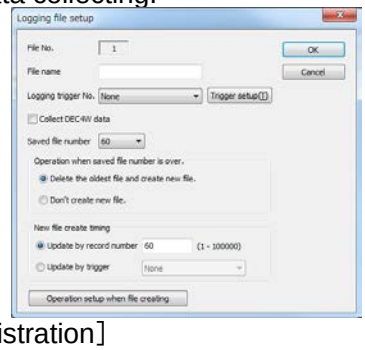


[Logging file setup]

↓

Register logging device

Set conditions for data collecting.



[Logging device registration]

↓

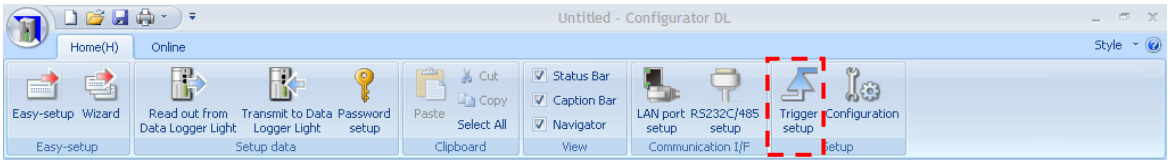
Transmit settings to Data Logger Light
or
Finish setting

[Setup procedure]

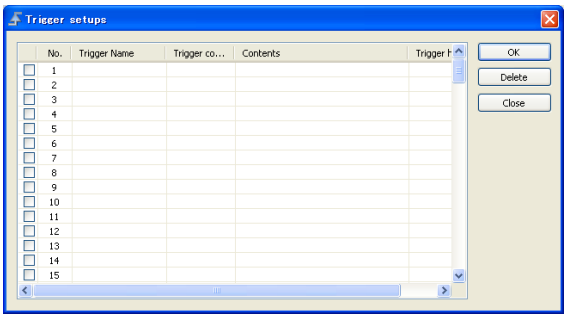
This is the example to set with the conditions below.

Item	Contents
Trigger name	15 min. cycle
Trigger Type	Fixed Cycle
Logging trigger	15 min.
Trigger Name	Midnight
Trigger Type	Appointed time
New file create timing	Everyday 00:00:05
Logging file name	sekisan
Logging device name	Integrated electric power
Unit No.	1

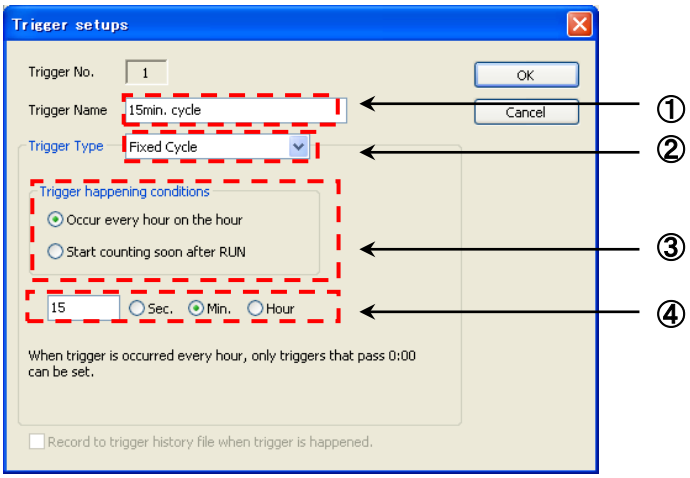
1) Click trigger setup icon to set.



2) Double-click any No.'s row from trigger list.
In this example, click No.1.

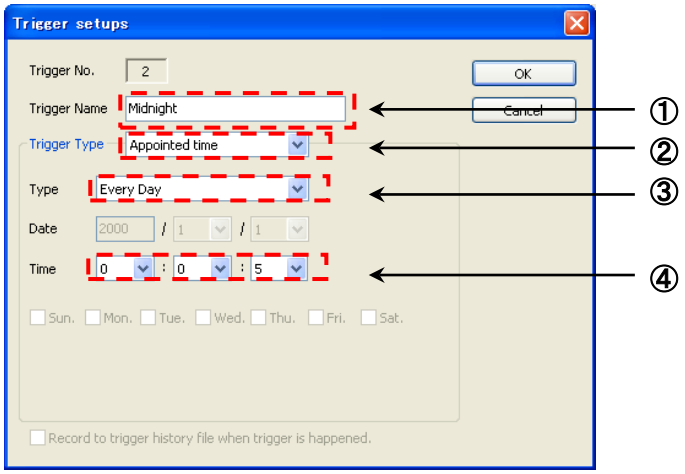


3) Setup conditions for logging trigger.
After completing all input, click “OK”.



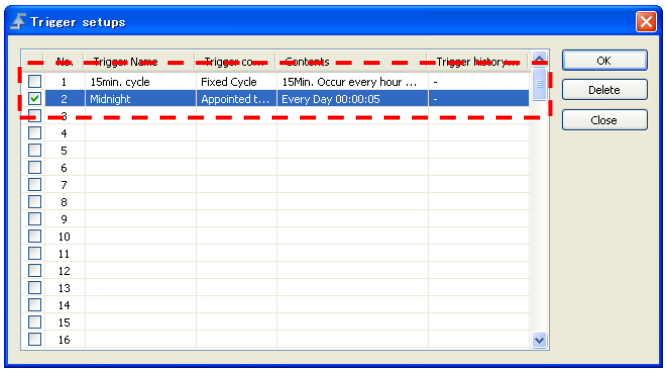
Item	Contents
① Trigger Name	Input “15 min. cycle”.
② Trigger Type	Select “Fixed Cycle”.
③ Trigger happening conditions	Select “Occur every hour on the hour”.
④ Cycle	Input “15” and select “Min.”.

4) Next, setup new file create trigger in the same way.
After completing all input, click “OK”.
In this example, it registers in No.2.



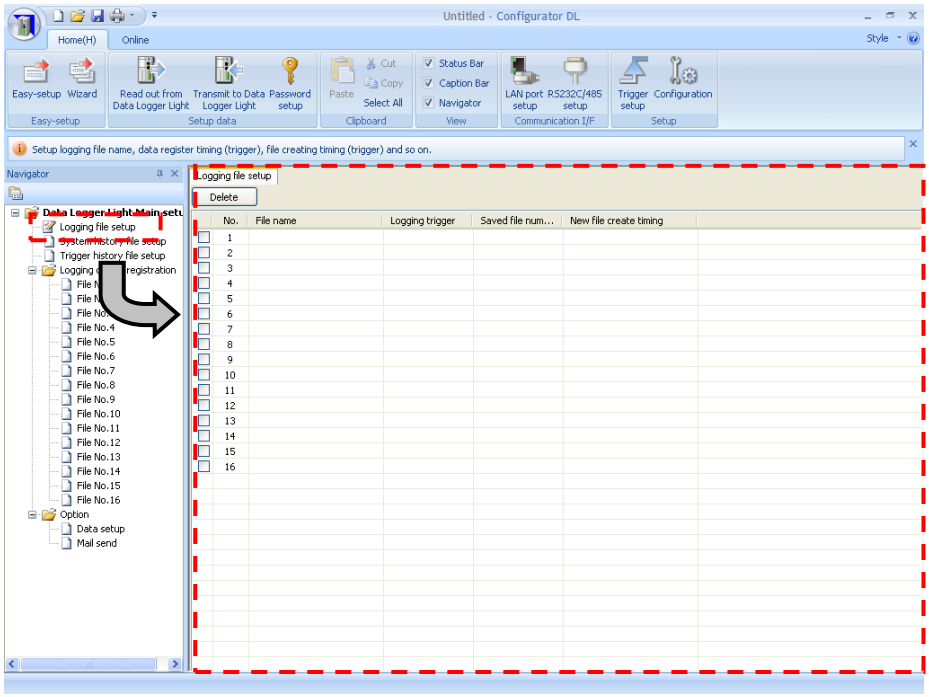
Item	Contents
① Trigger Name	Input “Midnight”
② Trigger Type	Select “Appointed time”.
③ Type	Select “Every day”.
④ Time	Set “0:0:5”.

5) If the setup is finished correctly, logging trigger is displayed in No.1 and new file create trigger is displayed in No.2.

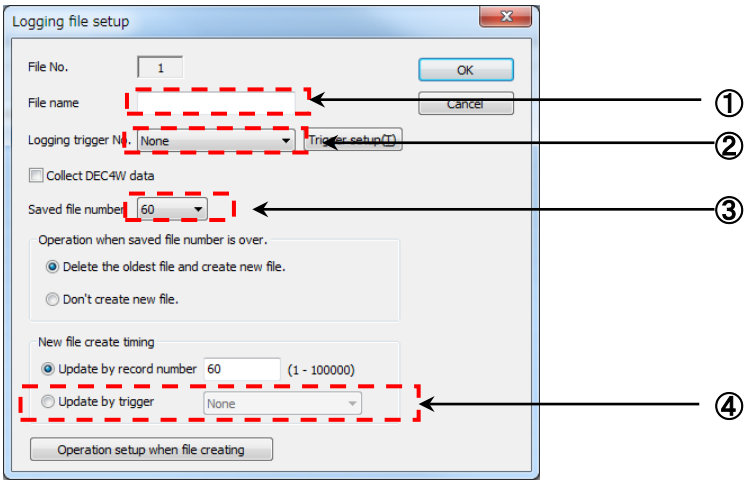


Reference
<7.2.13 Trigger setup>

6) Setup logging file.
Click “Logging file setup” in Navigator menu and logging file list is displayed on the right.
Double-click any No.’s row to register.
In this example, click No.1.



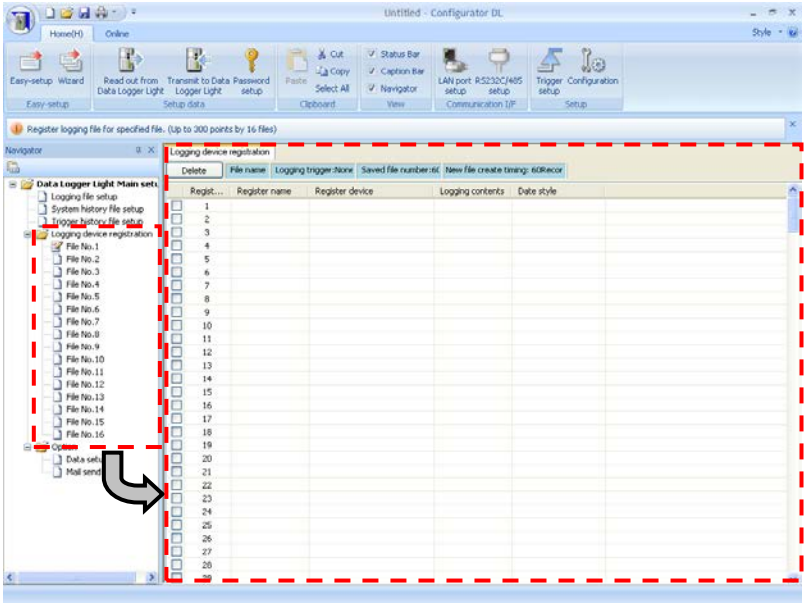
7) Setup each items to create logging file.
After completing all input, click “OK”.



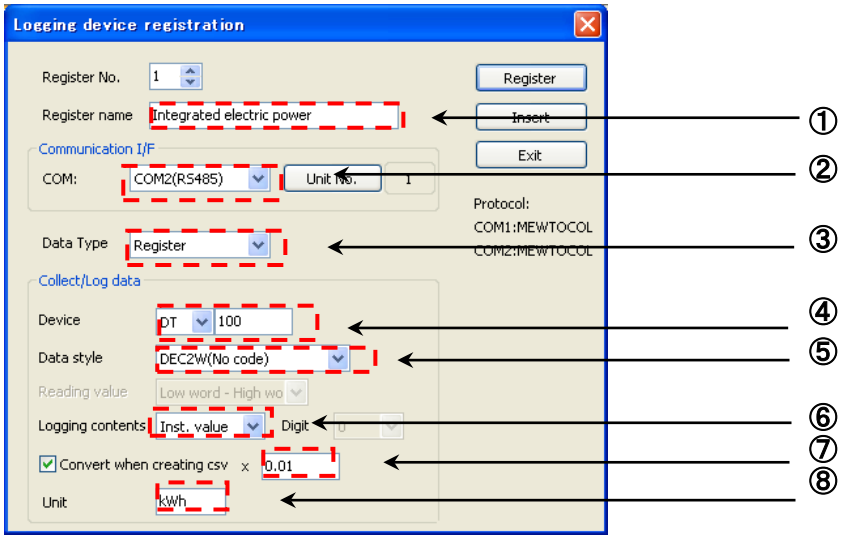
Item	Contents
① File name	Input “sekisan”.
② Logging trigger No.	Select logging cycle. Select trigger set at procedure 3) (Trigger No.:No.1)
③ Saved file number	Set the file number for logging file to save. In this example, Set to “100”, max.value.
④ New file create timing	Select timing to create logging file. Select trigger set at procedure 4) (Trigger No.:No.2)

Reference
<7.2.4 Logging file setup>

8) Setup for logging device registration.
Click one of the File No.1 to No.16 of “Logging device registration” in Navigator menu and logging device registration list of selected file No. is displayed on the right.
In this example, No.1 is selected at 6), click “File No.1” and double-click the row of No.1 in the list.



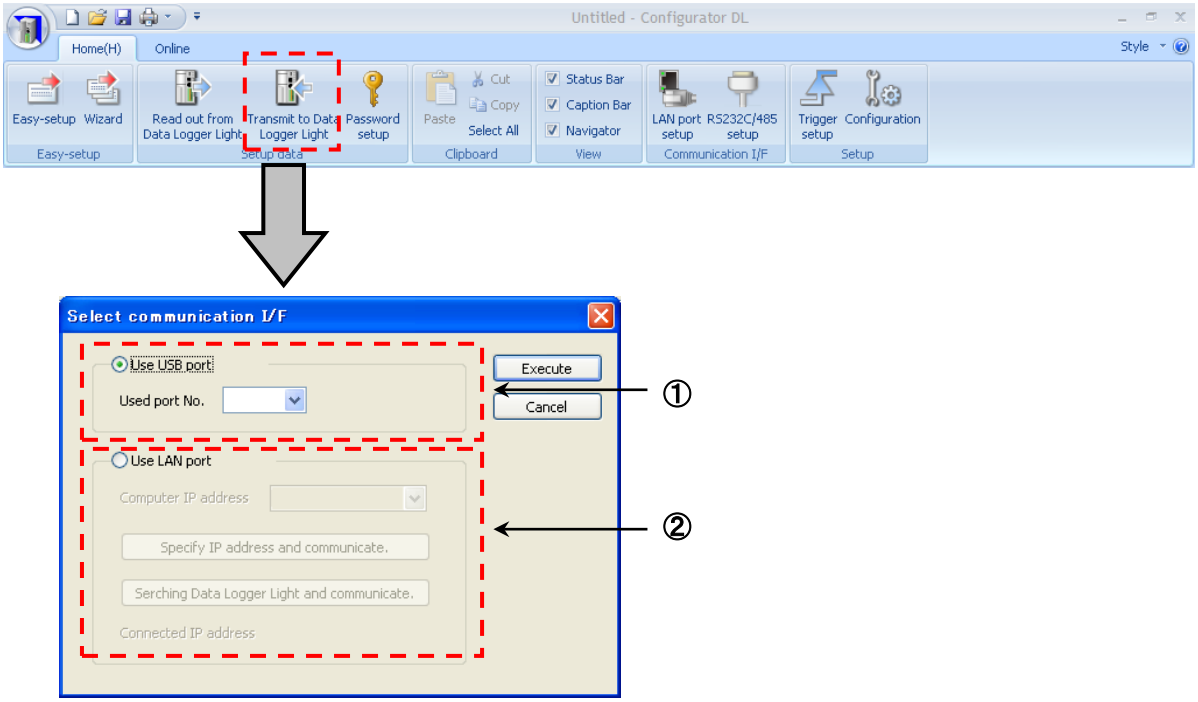
9) Setup each items to logging device registration.
After completing all input, click “Register”.



Item	Contents
① Register name	Input “Integrated electric power”
② Communication I/F	Select “COM2(RS485)”, “Unit No.1”
③ Data Type	Select “Register”.
④ Device	Input “DT 100” for “Integrated electric power”
⑤ Data style	Select “DEC2W (No code)”.
⑥ Logging contents	Select “Inst.value”
⑦ Convert when creating csv	Input “0.01” for collecting an integrated electric power.
⑧ Unit	Input “kWh”.

Reference
< 7.2.5 Logging device registration >

11) Transmit setup data to Data Logger Light.
So far, all setup is completed, transmit setup data to Data Logger Light.



Select communication method and transmit the setup data to Data Logger Light.
After selecting communication methods, click “Execute”
It transmits setup data to Data Logger Light.
If it doesn’t transmit setup data, save the setup data as named.

Item	Contents
① Use USB port	Transmit data via USB port.
② Use LAN port	Transmit data via LAN port.

Note
Operation mode should be set to “STOP” during transmitting.

Reference
< 7.2.8 Transmit to Data Logger Light and Read out from Data Logger Light >

Chapter 7 About Configurator DL

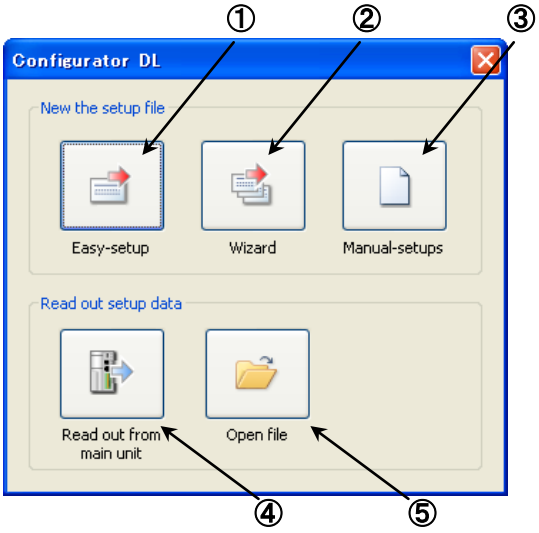
7.1 About Configurator DL

"Configurator DL" is the application software in order to use for setup of Data Logger Light.
Install to your PC and you can set up Data Logger Light without main unit.
Setup data can be transmitted to Data Logger Light and read out from Data Logger Light via USB or LAN.

7.2 Explanation of each menu

7.2.1 Top menu

Start this software and the menu below is displayed.



①Easy-setup

You can make new setup of Data Logger Light only by selecting cycle of logging trigger and unit No.
(Refer to 6.1.5 and 7.2.15)

②Wizard

You can make new setup of Data Logger Light dialogically. (Refer to 6.1.6 and 7.2.16)

③Manual-setups

You can make new setup of Data Logger Light by input in detail. (Refer to 6.1.7)

④Read out from main unit

You can read out setup data from Data Logger Light.

⑤Open file

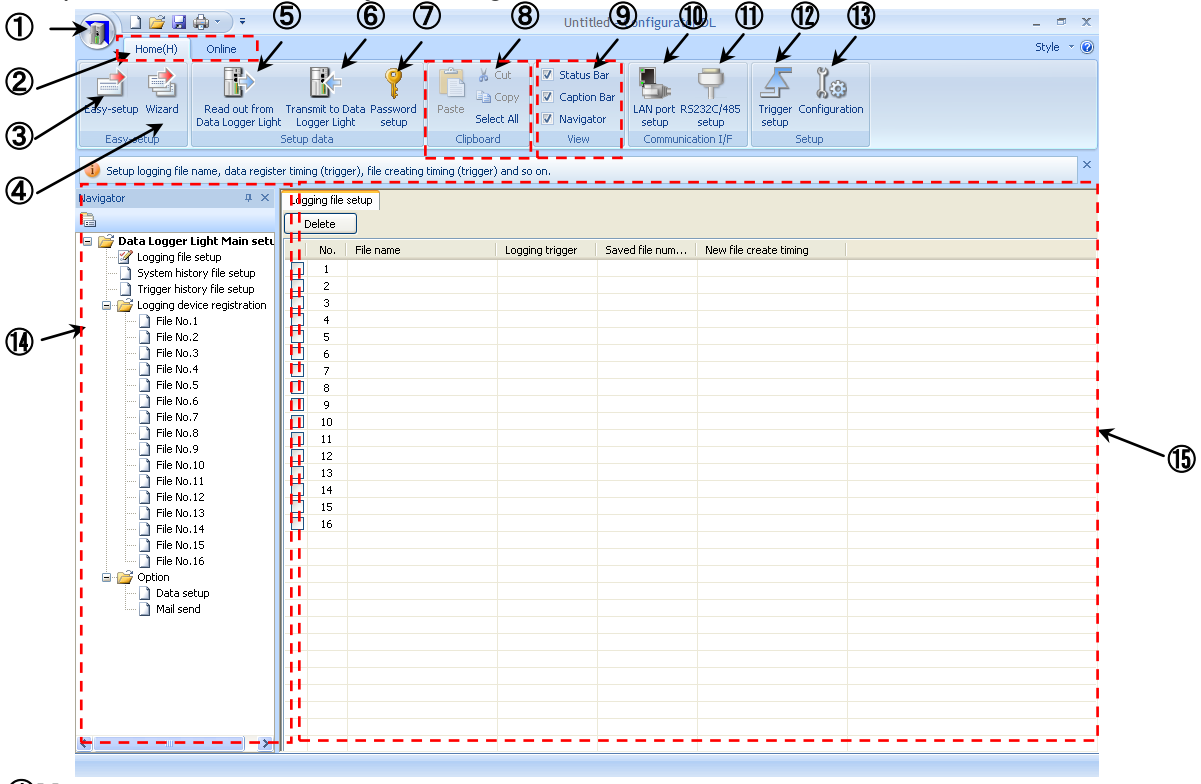
You can read out setup data from saved file.

7.2.2 Manual-setups Menu

Setup each item.
Click “Manual-setups” at top menu and it shifts to this menu.
Also when it finishes “Easy-setup” and “Wizard setup”, it shifts to this menu.
It shifts [Home] menu and [Online] menu by using tab.

■Home menu

Setup each item that is mainly collecting data.



①Menu

Setup items related setup file

②Menu shift

Shift [Home] menu and [Online] menu

③Easy-setup

Shift to Easy-setup window (Refer to 6.1.5)

④Wizard

Shift to Wizard setup window (Refer to 6.1.6)

⑤Transmit to Data Logger Light

Transmit setup data to Data Logger Light (Refer to 7.2.8)

⑥Read out from Data Logger Light

Read out setup data from Data Logger Light (Refer to 7.2.8)

⑦Password setup

Setup password that is used when data transmitting and data reading (Refer to 7.2.9)

⑧Clipboard
Cut and copy and paste setup items in the list

⑨View
Setup to display or hide for each tool bar

⑩LAN port setup
Setup items for LAN port (Refer to 7.2.10)

⑪RS232C/485 setup
Setup items for communication via RS232C/RS485 (Refer to 7.2.11)

⑫Trigger setup
Setup items for trigger (Refer to 7.2.13)

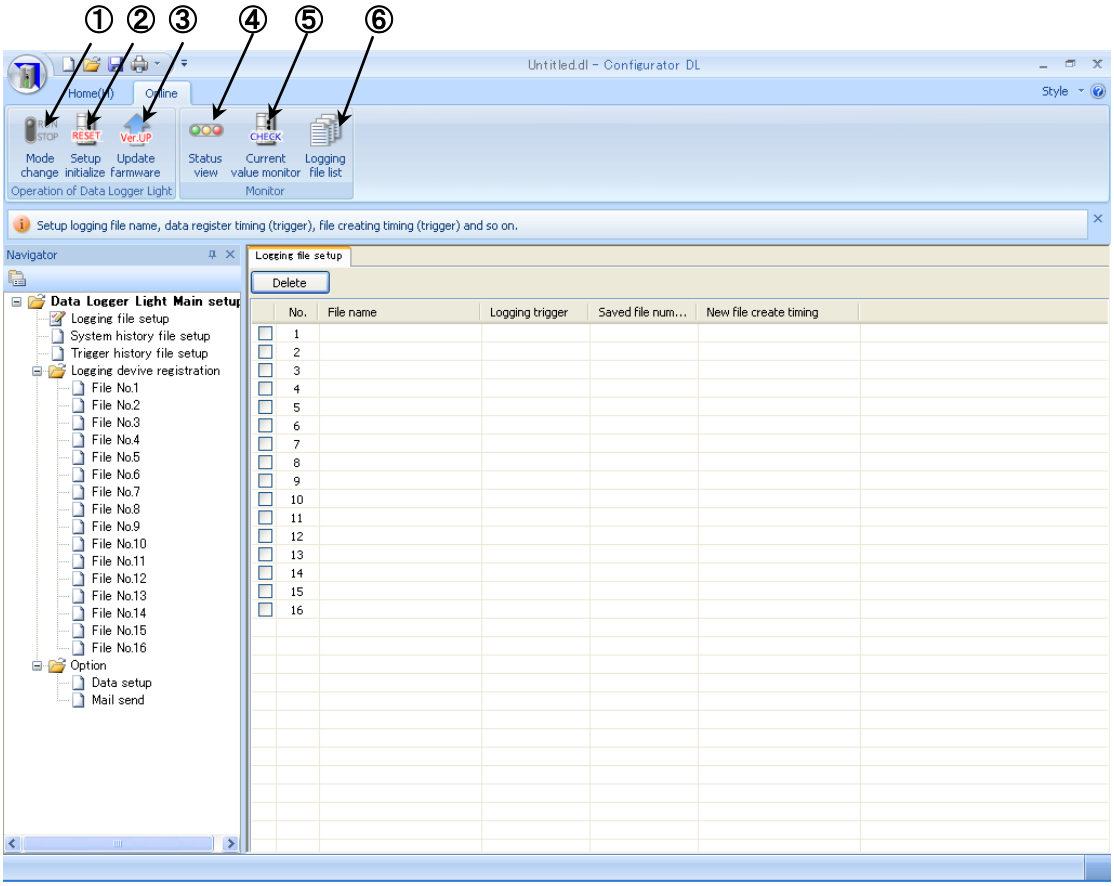
⑬Configuration
Setup items for configuration (Refer to 7.2.14)

⑭Navigator
Select item to register (Refer to 7.2.3,7.2.4,7.2.5,8.1.2,8.1.3)

⑮Registration list
Select number to register and display list of registration

■Online menu

You can select menu that is mainly monitoring status of Data Logger Light.



①Mode change

Change working mode of Data Logger Light (RUN/STOP)

Note

It can be switched regardless of the switch setting of Data Logger Light. However, it depends on the switch setting of Data Logger Light after the update of firmware, update of setting file or power activation.

②Setup initialize

Initialize setups that are set with software

③Update firmware

Update firmware of Data Logger Light (Refer to 7.2.17)

④Status view

Display status of Data Logger Light (Refer to 7.2.18)

⑤Current value monitor

Monitor the logging data currently (Refer to 7.2.19)

⑥Logging file list

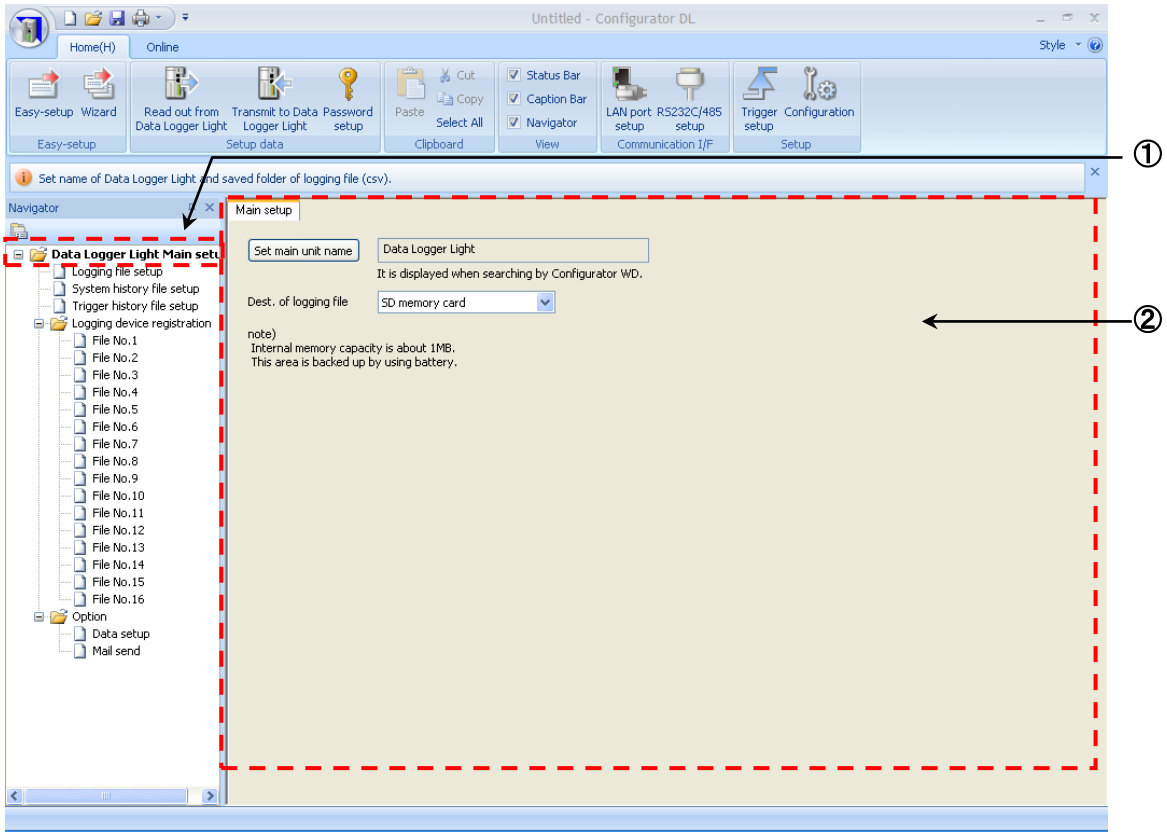
Display file list in SD memory card or internal memory. (Refer to 7.2.20)

Note

・Notice that the setup data by setting with software is initialized when it executes “Setup initialize”.
・The version of firmware in Data Logger Light is updated when it executes “Update firmware”. However, setup data are saved.

7.2.3 Setup of Data Logger Lights' name and destination to save

You can set the name of Data Logger Light and select destination to save logging data.



[Shift window]

① Click "Data Logger Light" in Navigator.
② It shifts to "Main setup" window.

[Set main unit name]

Set name of Data Logger Light.
It displays the name when communication setup and when searching by "Configurator WD".

Item	Contents
Name	Max. 32 letters

[Dest. of logging data]

Select destination of logging data.

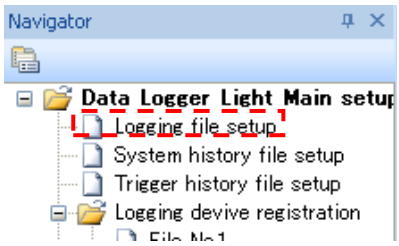
Item	Contents
SD memory card	Save file in SD memory card
Internal memory (SRAM)	Save file in the internal memory (SRAM)

Note

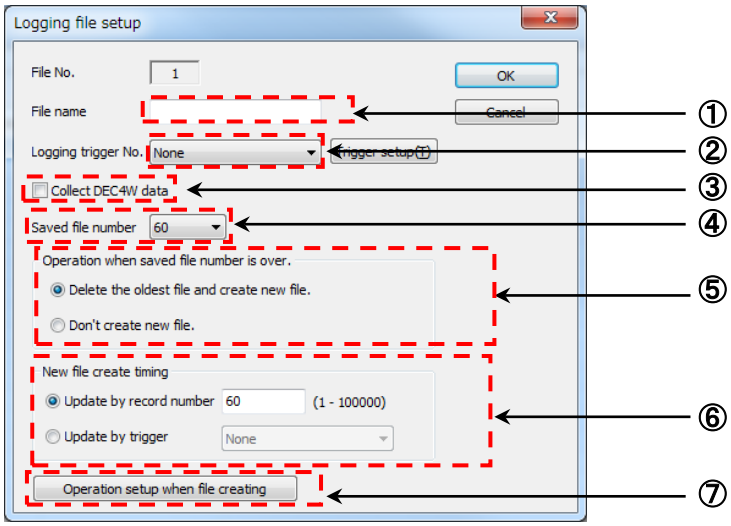
- Capacity of the internal memory is 1MB. Install backup battery when you'd like to use the internal memory.
- Be sure to check box of "Check battery voltage" at "Configuration->Operation when occurring error" (Refer to 7.2.14)

7.2.4 Logging file setup

■Logging file



It setup at “Logging file setup” in Navigator.
Logging file is a file with the csv format according to logging trigger that the data collected from each device (Eco-POWER METER, PLC etc.).
It is saved in SD memory card or internal memory.



Item	Contents
① File name	Input name of logging file(csv). Input range: Max. 32 letters *1
② Logging trigger No.	Select trigger No. set at trigger setup. Data is logged in file at the timing set at this point.
③ Collect DEC4W data	Check box to collect DEC4W data.
④ Saved file number	Set the file number for logging file to save. Input range: 1 to 100
⑤ Operation when saved file number is over.	Set the operation when saved file number is over. ・Delete the oldest file and create new file. ・Don't create new file. If the saved file number is over, it doesn’t create new file.
⑥ New file create timing	Set timing for creating a logging file. ・Update by record number When it reaches the appointed record number, it creates new logging file. Input range: 1 to 100000 ・Update by trigger Select one of the setting trigger numbers.
⑦ Operation setup when file creating	File is created with the condition set by new file create timing. It can send mail at that time.

Note

＊1 It can't use the below letters.

Letter	name	letter	Name
¥	Yen	*	Asterisk
/	Slash	?	Question mark
＼	Backslash	"	Double quotation
:	Colon	<	Inequality sign
;	Semi-colon	>	Inequality sign
.	dot	|	pipe
	Half-width space (only the beginning)		

Note

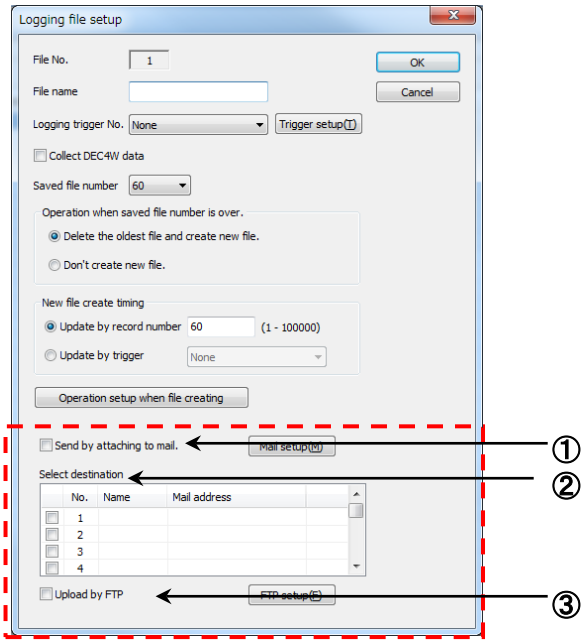
・It is difficult to collect in short cycle due to communication time when there are many registered devices or there are some wireless devices in the system. And it is one of the factors of missing data.
・When record number is over 65536 (include header), it can't opened with Excel 2003 or before version.
・When saved file number is met in selecting "Don't create new file", it will stop logging data.
・Do not set the same trigger for "Logging trigger" and "New file create timing". Due to the timing, correct data value may not be recorded or mail may not be sent.
・Set different timings to send mail, upload by FTP, and create new file, if not, it may not attach file to mail.

Reference

< 7.2.13 Trigger setup >

⑦Operation setup when file creating

At "Operation setup when file creating", it set to send mail attached a creating file when a file is created at setting timing.
Click "Operation setup when file creating", it displays the menu below.



Item	Contents
① Send by attaching to mail.	Check box to send a file attaching to mail when the file is created.
② Select destination	Check boxes of name to be sent mail. You can send mail to several destinations by checking boxes. (Max. 16 users)
③ Upload by FTP	Check box and upload by FTP server.

Point

Sending mail contents is as below.
Title: File name[YYMMDDHHMMSS][Occurrence]
Body: None
Ex.) Logging file name: sekisan Time: August 1st 2010 12:00:00
-> Title is sekisan[100801120000][Occurrence].

Note

・Is you set operation when file creating, set the cycle to at least 5 minutes for sending mail and updating cycle with FTP.
・If there are spaces with the name of attached file, some mail-sever can't send it.
・Set different timings to send mail, upload by FTP, and create new file, if not, it may not attach file to mail.

Retry

In case of that the logging file can't send by mail or FTP, you can retry by the setting.
The file that it retries to send is the same logging file that is intended to send first.
Even if the logging trigger is happened at retry, it doesn't add new data to the logging file.

Reference

<7.2.7 Mail sending setup>
<7.2.10 LAN port setup>

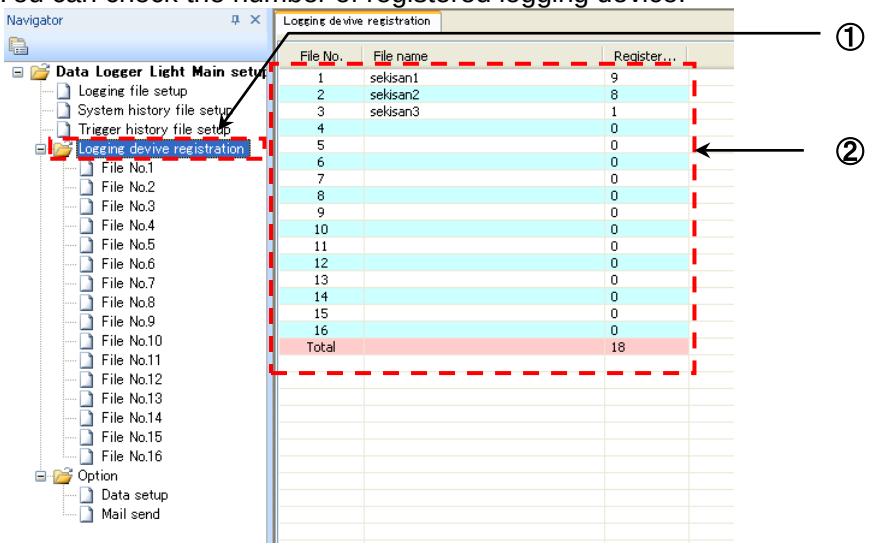
7.2.5 Logging device registration

■Logging device registration

It setup data type to be collected from Eco-POWER METER or PLC connected to Data Logger Light.

■How to check the number of registered logging device

You can check the number of registered logging device.



[Shift window]

① Click “Logging device registration” in Navigator.

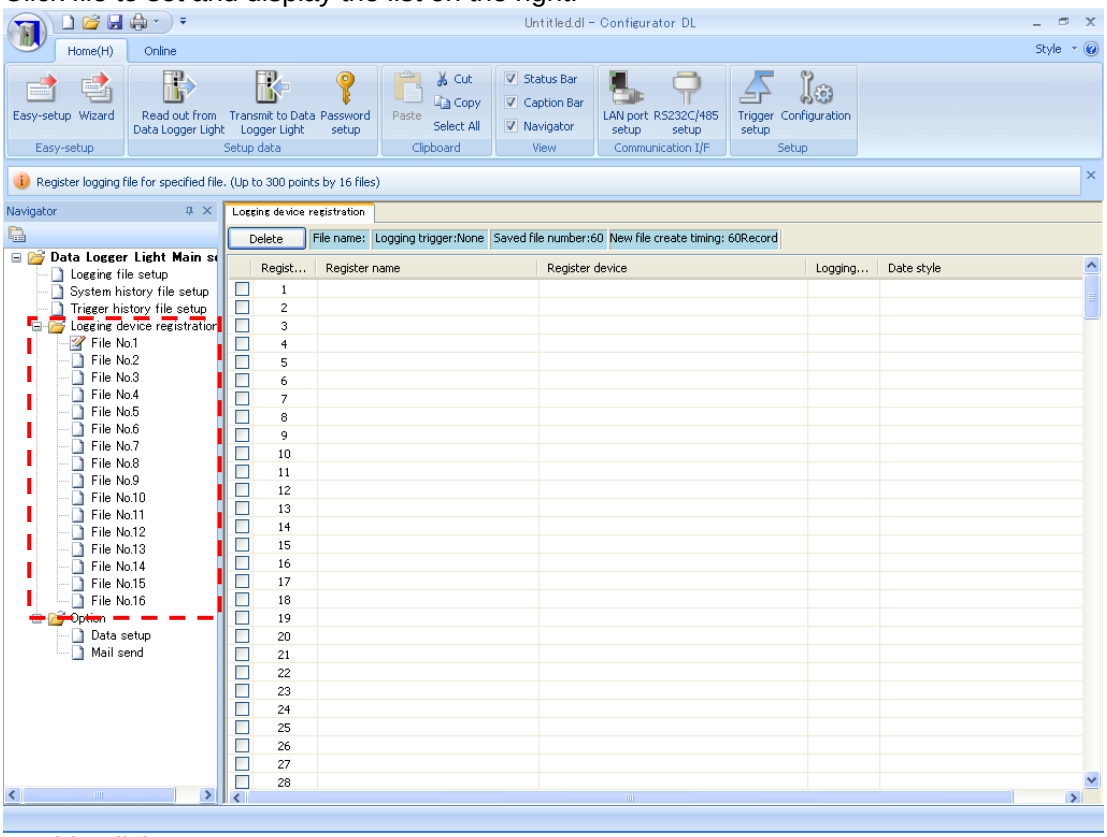
② The number of registered device for each file is displayed on the right.

Note

- **Max. registered number is 300 points total of 16 files.**
  If 300 points are registered in 1 file, no more point is registered in another file.
  However, max. registered number of files, that is set available to collect DEC4W data, is 150 points total. Max. registered number is 300 points total of 16 files.
- When registered number is over 256 points (include date and time), it can’t opened with Excel 2003 or before version.

■Logging device registration

It sets each items of logging data items and logging conditions.
Click file to set and display the list on the right.



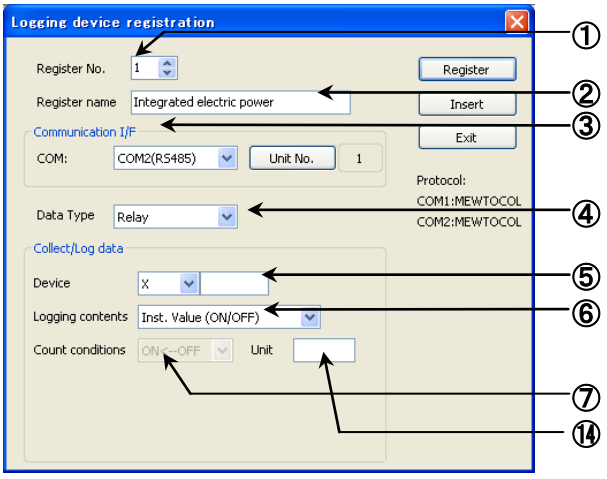
Double-click any No.'s rows to setup.

Item	Contents
File number	Max. 16 files (300 points per 1 file *1)

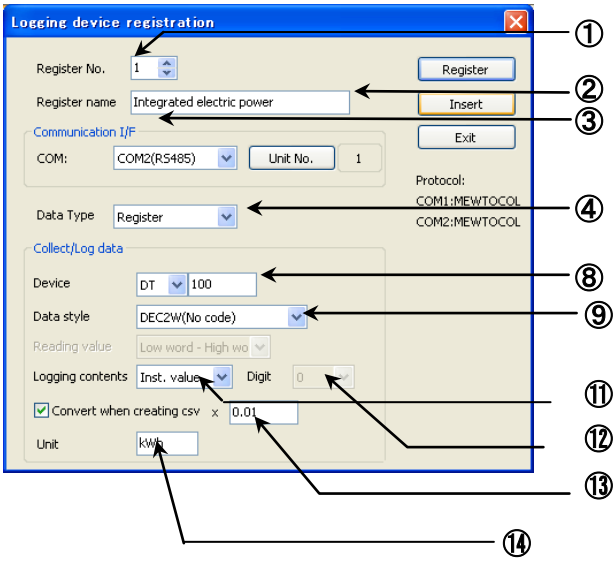
*1 150 points for files that is set available to collect DEC4W data.

Ex.) MEWTOCOL

[Relay] is the target



[Register] is the target



[MEWTOCOL]

Item				Contents
①	Register No.			1 to 300 (not available to collect DEC4W data) 1 to 150 (available to collect DEC4W data)
②	Register name			Input register name. Max. 32 letters *1
③	Communication I/F			Main unit / COM1(RS232C) / COM2(RS485) Unit No. 1:1 / 1:N (1 to 99)
④	Data type			Relay / Register
⑤	Collecting and logging data	Relay	Device *2	・Select from X,Y,R,L,T,C ・Relay number(Decimal)
⑥			Logging contents	Inst.value(ON／OFF), Accumulated ON time, Total switching times
⑦			Count conditions *3	OFF→ON, ON→OFF, ON⇔OFF
⑧		Register	Device *2	・Select from WX, WY, WR, WL, DT, LD, SV, EV, FL. ・Register number(Decimal)
⑨			Data style	・DEC1W ・DEC1W(No code) ・HEX4 digits ・DEC2W ・DEC2W(No code) ・HEX8 digits ・Real number ・DEC4W ・DEC4W(No code)
⑩			-	-
⑪			Logging contents	・Inst.value ・Ave.value ・Min.value ・Max.value ・Diff.value (Digit can be input only for differential value.)
⑫			Digit *4	0 to 19 *5 (only for differential value)
⑬			Convert when creating csv	It multiplies the coefficient when creating csv. Input range: -99999.999 to 99999.999 (Number of significant figures: 6 digits)
⑭		Unit		Max. 4 letters

Note

*1 It can't use the below letters.

letter	name
,	comma
"	Double quotation

*2 Input data register number to collect.
Ex.) When it is "Integrated electric power", input "Register: DT100".
Refer to the manual of each connecting device for data register number.

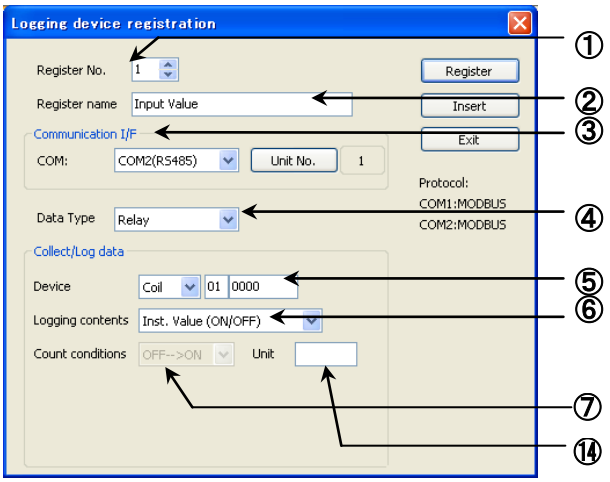
*3 It can be selected only when "Total switching times" is selected at "Logging contents".

*4 It can be input when "Diff value" is selected at "Logging contents".
It corrects data when it is over the max. digit by inputting digit number, (Ex. When setting 3 digits, the max. value is 999.) (Refer to 7.2.12)
Input the max digit number for logging items.

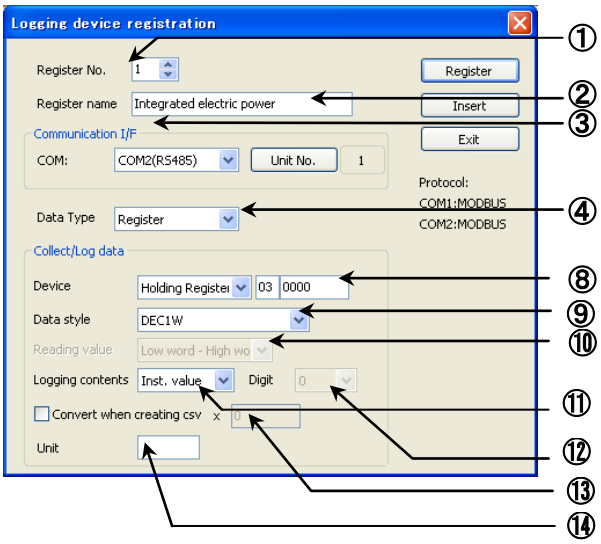
*5 It can be set '10 to 19' only when 'Collect DEC4W data' is set to available. Ex.) MODBUS

Ex.) MODBUS

[Coil] is the target



[Register] is the target



[MODBUS]

Item				Contents
①	Register No.			1 to 300 (not available to collect DEC4W data) 1 to 150 (available to collect DEC4W data)
②	Register name			Input register name. Max. 32 letters *1
③	Communication I/F			Main unit / COM1(RS232C) / COM2(RS485) Unit No. 1:1 / 1:N (1 to 99)
④	Data type			Relay / Register
⑤	Collecting and logging data	Relay	Device *2	・Select from Coil, Input ・Relay number(Hex)
⑥			Logging contents	Inst.value(ON／OFF), Accumulated ON time, Total switching times
⑦			Count conditions *3	OFF→ON, ON→OFF, ON⇔OFF
⑧		Register	Device *2	・Select from Holding register, Input register ・Register number(Hex)
⑨			Data style	・DEC1W ・DEC1W(No code) ・HEX4 digits ・DEC2W ・DEC2W(No code) ・HEX8 digits ・Real number ・DEC4W ・DEC4W(No code)
⑩			Reading value	Select from Low Byte - High Byte, High byte - Low Byte *6
⑪			Logging contents	・Inst.value ・Ave.value ・Min.value ・Max.value ・Diff.value (Digit can be input only for differential value.)
⑫			Digit *4	0 to 19 *5 (only for differential value)
⑬			Convert when creating csv	It multiplies the coefficient when creating csv. Input range: -9999.999 to 9999.999
⑭		Unit		Max. 4 letters

Note

*1 It can't use the below letters.

letter	name	letter	Name
¥	Yen	*	Asterisk
/	Slash	?	Question mark
＼	Backslash	"	Double quotation
:	Colon	<	Inequality sign
;	Semi-colon	>	Inequality sign
.	dot	|	pipe

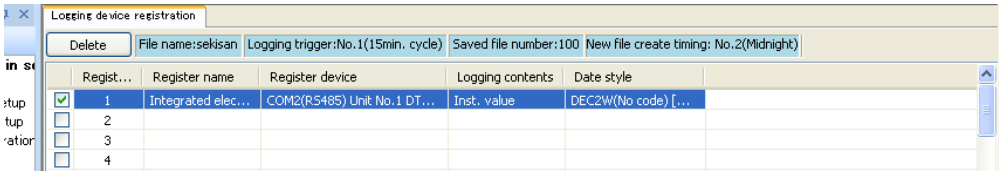
*2 Input data register number to collect.
Ex.) When it is "Integrated electric power", input "Holding register: 0064".
Refer to the manual of each connecting device for data register number.
*3 It can be selected only when "Total switching times" is selected at "Logging contents".
*4 It can be input when "Diff value" is selected at "Logging contents".
It corrects data when it is over the max. digit by inputting digit number, (Ex. When setting 3 digits, the max. value is 999.) (Refer to 7.2.12)
Input the max digit number for logging items.
*5 It can be set '10 to 19' only when 'Collect DEC4W data' is set to available.
*6 "Data style" can be selected when "DEC2W", "DEC2W(No code)", "HEX8 digits", "Real number", "DEC4W" or "DEC42W(No code)" is set.

Note

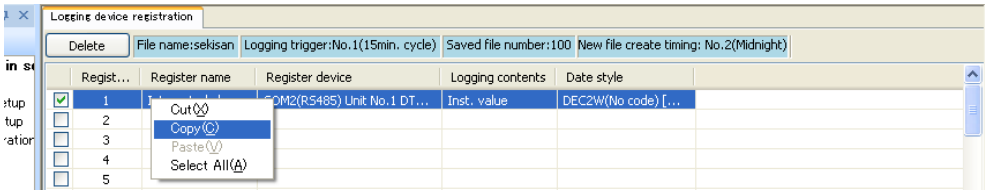
・It shifts register No without closing window by using up and down button of Register No. It shifts to another No. without any registration if "Register" is not clicked before using up and down button.

・It can copy & paste the setting items.
[Procedure] Ex.) Copy items of No.1 to No.5.

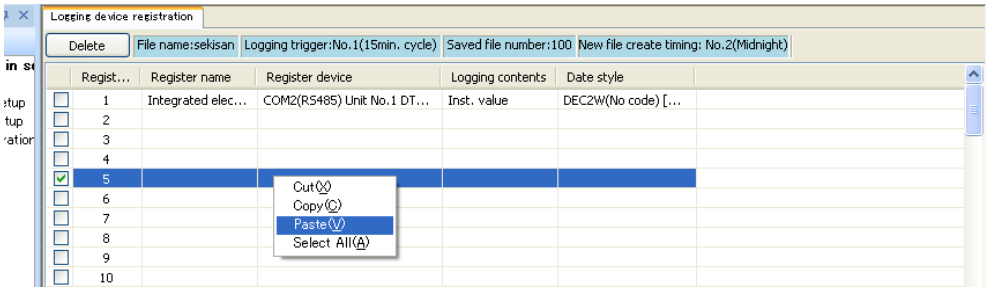
1) Select row and right-click the row, it displays menu.



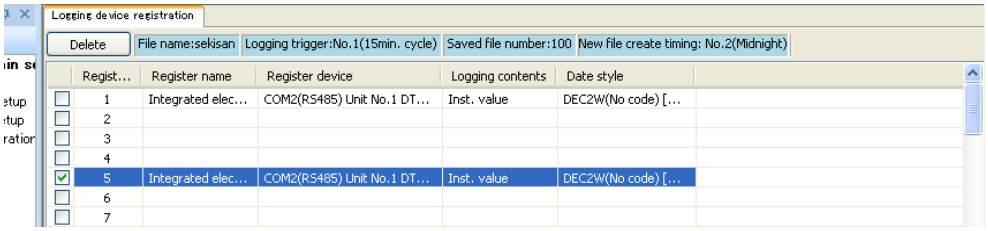
2) Select “Copy” from the menu.



3) Right-click row of No. to copy, it displays menu.
Select “Paste”.



4) So far copy is finished. Change the register name and unit No. and so on if necessary.



7.2.6 Data setups

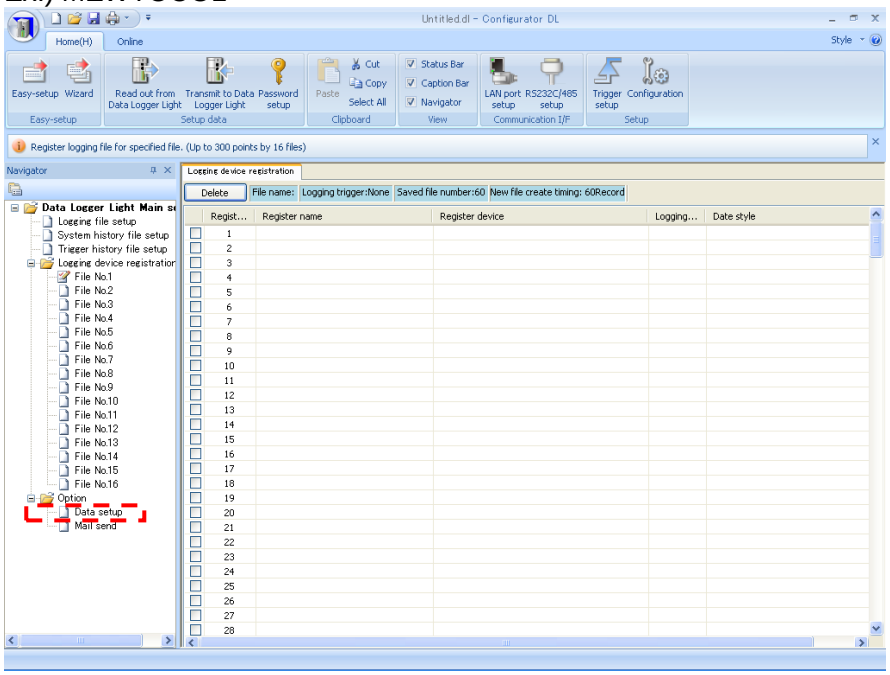
It can rewrite the appointed relay status and register by setup trigger.
For example, it is used for initializing an appointed register when meeting some conditions.

Double-click row of No. to set from the list.
Registered data are shown in the list on the right.

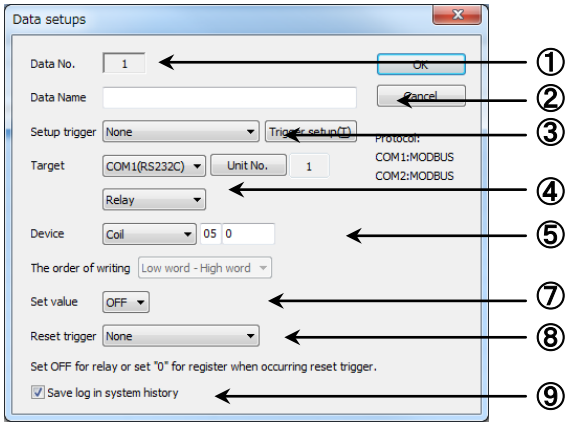
Point

You can setup in RS232C/RS485 setup window. Select ‘Data setup’ for usage.
(Refer to <7.2.11 RS232C/RS485 setup>)

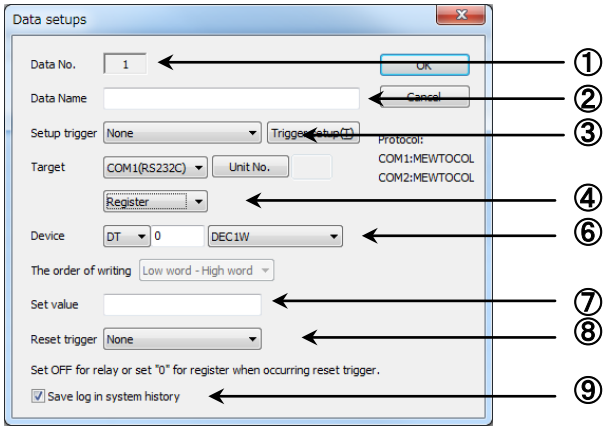
Ex.) MEWTOCOL



[Relay] is the target



[Register] is the target

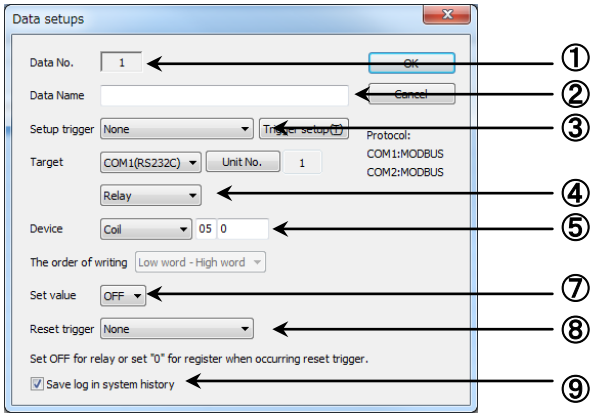


[MEWTOCOL]

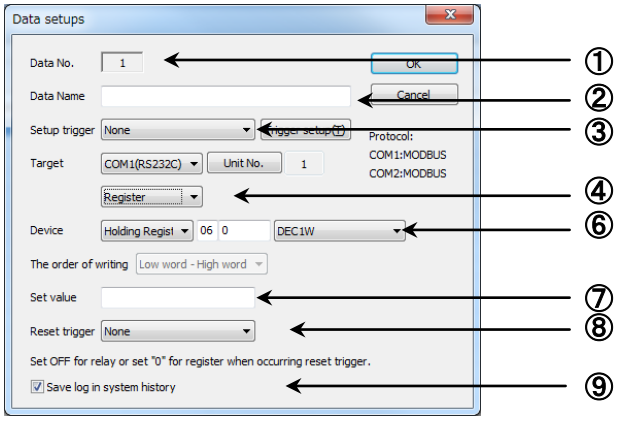
Item		Contents		
①	Data No.	Display the selected registration No. (Max. 128 types)		
②	Data Name	Input data name. Input range: Max.32 letters		
③	Setup trigger	Select trigger number to be set at trigger setup. It setup data by the timing to be set at this point.		
④	Target	Main unit	Relay, Register	
		COM1(RS232C)		
		COM2(RS485)		
⑤	Device	Relay	Main unit	Y,R
			COM1(RS232C) COM2(RS485)	Y,R,L
⑥		Register	Main unit	WY, WR, DT
			COM1(RS232C) COM2(RS485)	WX, WY, WR, WL, DT, LD, SV, EV, FL
			Data style	DEC1W DEC1W(No code) HEX4 digits DEC2W DEC2W(No code) HEX8 digits Real number DEC4W DEC4W(No code)
⑦	Set value	Relay status	ON, OFF	
		Register	Input value to be set to register. DEC1W : -32768 to 32767 DEC1W(No code) : 0 to 65535 HEX4 digits : 0 to FFFF DEC2W : -2147483648 to 2147483647 DEC2W(No code) : 0 to 4294967295 HEX8 digits : 0 to FFFFFFFF Real number(single precision) :-3.4028235E+35 to -1.401298E-45 : 1.401298E-45 to 3.4028235E+38 DEC4W : -9223372036854775808 to 9223372036854775807 DEC4W(No code): 0 to 18446744073709551615	
⑧	Reset trigger	Select trigger No to be set at trigger setup. OFF is set for relay, “0” is set for register at the timing to be set at this point.		
⑨	Save log in system history	Check box to save log of data setting.		

Ex.) MODBUS

[Relay] is the target



[Register] is the target



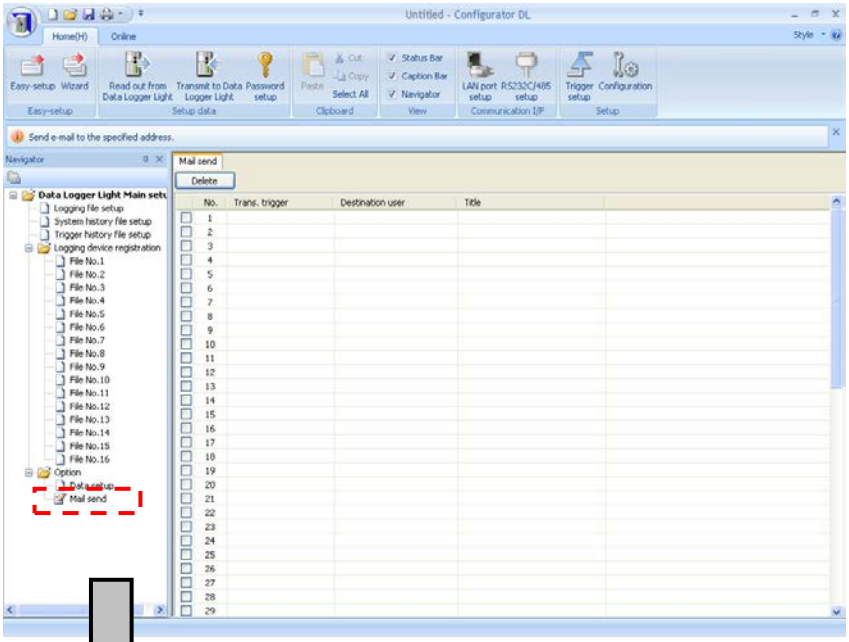
[MODBUS]

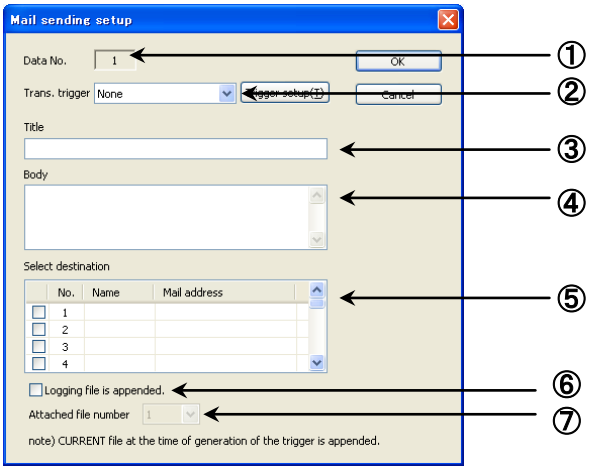
Item		Contents		
①	Data No.	Display the selected registration No. (Max. 128 types)		
②	Data Name	Input data name. Input range: Max.32 letters		
③	Setup trigger	Select trigger number to be set at trigger setup. It setup data by the timing to be set at this point.		
④	Target	Main unit	Relay, Register	
		COM1(RS232C)		
		COM2(RS485)		
⑤	Device	Relay	Main unit	Y,R
			COM1(RS232C) COM2(RS485)	Coil
⑥		Register	Main unit	WY, WR, DT
			COM1(RS232C) COM2(RS485)	Holding register
			Data style	DEC1W DEC1W(No code) HEX4 digits DEC2W DEC2W(No code) HEX8 digits Real number DEC4W DEC4W(No code)

⑦	Set value	Relay status	ON, OFF
		Register	Input value to be set to register. DEC1W : -32768 to 32767 DEC1W(No code) : 0 to 65535 HEX4 digits : 0 to FFFF DEC2W : -2147483648 to 2147483647 DEC2W(No code) : 0 to 4294967295 HEX8 digits : 0 to FFFFFFFF Real number(single precision) :-3.4028235E+38 to -1.401298E-45 : 1.401298E-45 to 3.4028235E+38 DEC4W : -9223372036854775808 to 9223372036854775807 DEC4W(No code): 0 to 18446744073709551615
	Writing order	Low Byte - High Byte, High byte - Low Byte Selectable when the register is set to "DEC2W", "DEC2W(No code)", "HEX8 digits", "Real number","DEC2W" or "DEC2W(No code)".	
⑧	Reset trigger	Select trigger No to be set at trigger setup. OFF is set for relay, "0" is set for register at the timing to be set at this point.	
⑨	Save log in system history	Check box to save log of data setting.	

7.2.7 Mail sending setup

It sends mail to the specified address by setting trigger.
For example, if it set to detect abnormal value at trigger setup, it will send mail when detecting abnormal value. It is used for receiving the information of occur some errors.
In addition, it sends a file attached to mail at sending mail.
Double-click row of No. to set from the list.





Item	Contents
① Data No.	Display the selected registration No. (Max. 128 types)
② Trans. trigger	Select trigger number to be set at trigger setup. It sends mail by the timing to be set at this point.
③ Title	Input title of sending mail. Input range: Max. 16 letters
④ Body	Input body of sending mail. Input range: Max. 254 letters
⑤ Select destination	Select destination address to send mail. Click box to select. Mail addresses are registered at “Configuration->Mail send registration”
⑥ Logging file is attached.	Check box to send mail with attaching a file.
⑦ Attached file number	When attaching file to mail, set the file number to attach.

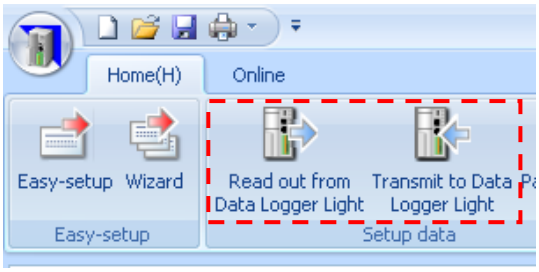
After registration, it displays in the list on the right.

Note

- In order to send mail, it is necessary to setup items for destination and mail beforehand. Refer to LAN port setup (7.2.10)
- To use "Fixed Cycle" for the trigger of mail transmission, set the cycle to at least 5 minutes.
- Note that when attaching file to mail, attached file might not be sent depending on mail server if a space is included in the file name.
- Set different timings to send mail, upload by FTP, and create new file, if not, it may not attach file to mail.

7.2.8 Transmit to Data Logger Light and Read out from Data Logger Light (Access to Main unit)

It transmits the setup data to Data Logger Light.
And it reads out from the setup data from Data Logger Light to Configurator DL.

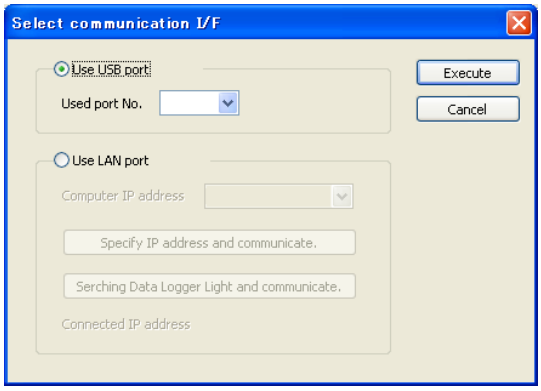


Item	Contents
Read out from Data Logger Light	Read out the setup data from Data Logger Light to Configurator DL.
Transmit to Data Logger Light	Write the setup data to Data Logger Light.

■Access to Data Logger Light

When communicating to Data Logger Light (transfer or read out), select communication I/F.
You can transmit via USB port or LAN port.
After selecting, click “Execute”.

In case of [USB port]

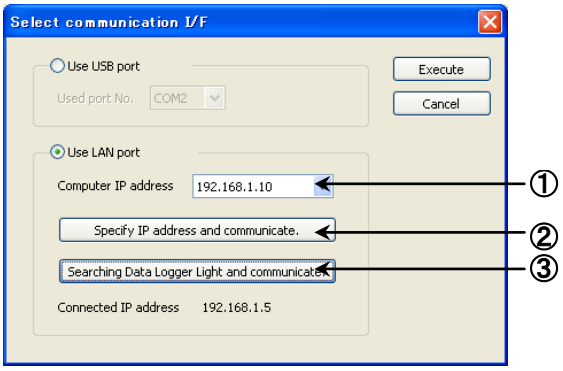


Item	Contents
Used port No.	Select connected port of USB. After PC recognizes USB, COM port can be selected. If COM port is not displayed, confirm the connection status.

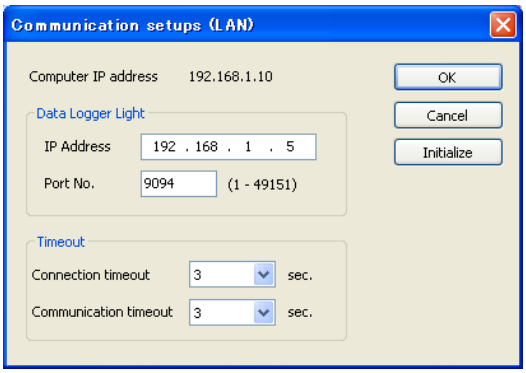
Point
・You can check COM port by
“Control panel → System → Property → Device manager”

Note
・In case of using USB port, install USB driver attached to “Configurator DL”.
(Refer to 6.1.3)

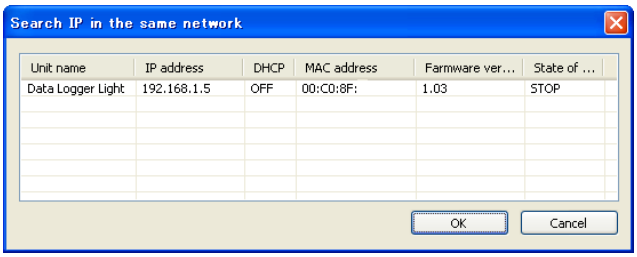
In case of [LAN port]



②[Specify IP address and communicate.]



③[Searching Data Logger Light and communicate.]



Item		Contents
①	Computer IP address	It displays IP address of computer.
②	Specify IP address and communicate.	Input IP address of connected Data Logger Light.
③	Searching Data Logger Light and communicate.	It searches Data Logger Light on the network. After searching (double-click), select the unit to communicate.

Note

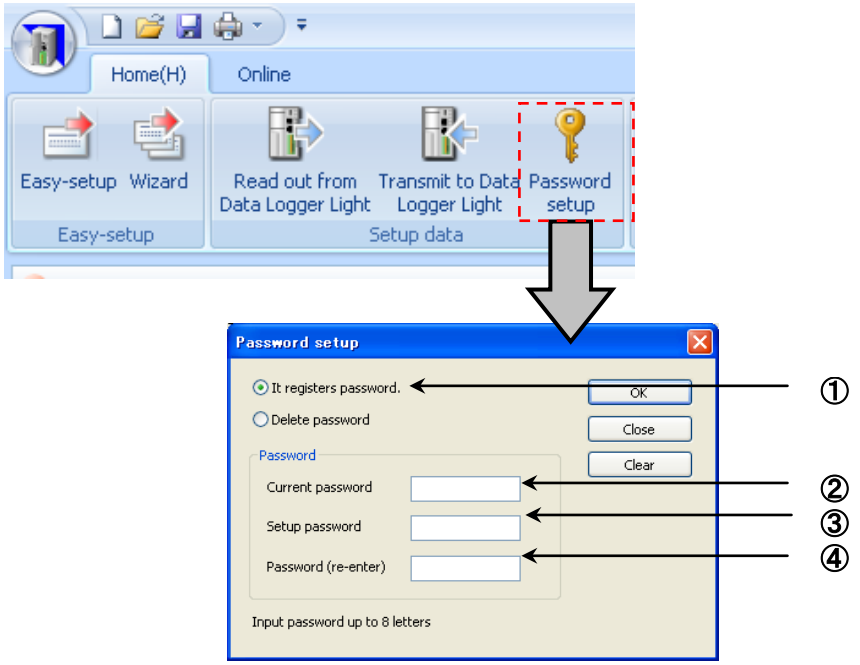
・Operation mode should be set to “STOP” during transmitting data.
・After transmitting data, it will restart.
Therefore it will take time to recognize USB, LAN connectors.
・If Data Logger Light is in the different network group from PC, it cannot communicate.
It is necessary to change IP address of Data Logger Light or PC.
Confirm your system administrator about using IP address.
・Input the same port No. set at “Configuration -> ort Number” for MEWTOCOL.
(Refer to 7.2.14)

Point

At the below menu, you should select communication I/F.
・When transmitting data at Easy-setup and Wizard
・Read out from Data Logger Light
・Transmit to Data Logger Light
・Mode change
・Setup initialize
・Update firmware
・Status view
・Current value monitor

7.2.9 Password setup

It sets password that is used when transmitting data or reading out data for Data Logger Light. Password setting prevents from unconsidered changing setups.



Item	Contents
① Password setup	・It registers password ・Delete password
② Current password	Input the password that is set at the moment. Input range: Max. 8 letters
③ Setup password	Input new password Input range: Max. 8 letters
④ Password (re-enter)	Input new password again to confirm. Input range: Max. 8 letters

Point

・Password setup in this point is different from the password to access FTP server. This password is used when it updates setup data.

・After password is set, it will request the password at the time when the menus below are executed.
Read out from Data Logger Light
Transmit to Data Logger Light
Update firmware

・When you forget the password, execute the one of these and it delete the password. In this case, setup data are initialized. Take care for the operation and handling password.
①Click “clear” button.
②Initialize the setups and transmit to Data Logger Light
③Initialize Data Logger Light

Note

Password setting is designed to avoid setups being accidentally changed. If the password is forgotten, however, it will be impossible to change the setup data even if you want to. When specifying password, note it in the safe place in case that it is forgotten at some point.
It is impossible to crack the password by our company.

7.2.10 LAN port setup

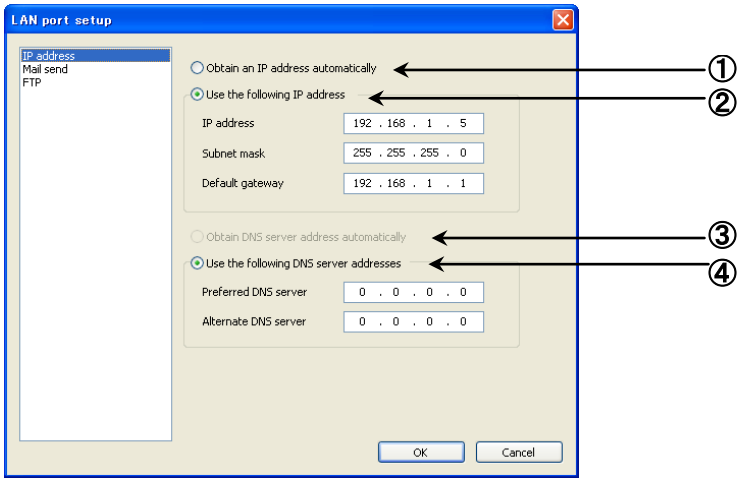
It sets each setting of LAN port. It is necessary to set Data Logger Light on the network.
Set IP address and each setting for mail sending.

Point

Confirm to your network system administrator about each setting.

■IP address

It set IP address of Data Logger Light



Item	Contents
① Obtain an IP address automatically	It obtains an IP address automatically.
② Use the following IP address	Input any IP address, subnet mask and default gateway.
③ Obtain DNS server address automatically	It obtains DNS server address automatically.
④ Use the following DNS server addresses	Input any preferred DNS server and alternate DNS server.

[Initial]

Item	Contents
IP address	192.168.1.5
Subnet mask	255.255.255.0
Default gateway	192.168.1.1

Point

When you check the box of 'Obtain an IP address automatically', it will obtain IP address by sending request to DHCP server at starting the unit (turn on power, transmit settings, restart after updating firmware). In case of failure of the obtain, it will retry for 30 minutes every α seconds, (α: 0 to 60 at random, set at every time). After the failure of retry, it will set the standard address (192.168.1.5) and it will be error.

What is “DNS server”?

Domain Name System (DNS) is a service that obtains IP address from a computer name. The computer provides this service is called DNS server. IP address can be obtained by inquiring to server.

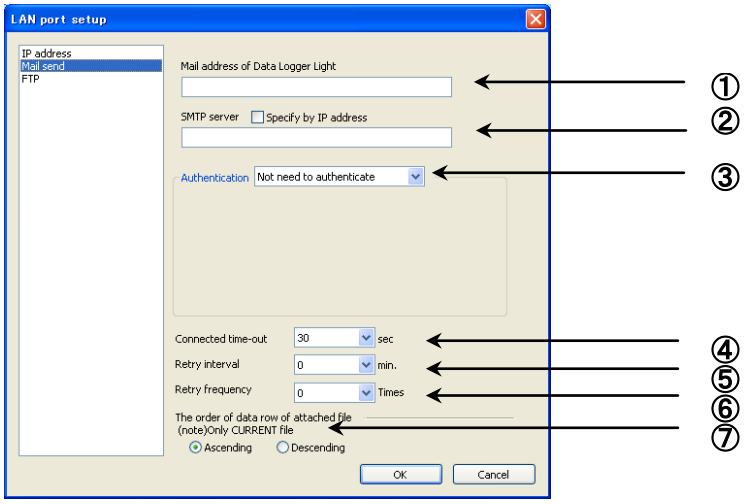
It is necessary to appoint by name for the below functions.

・Sending mail (SMTP server or POP server)

・Auto time setting (SNTP server)

■Mail sending

It setup items to send mail.



	Item		Contents
①	Mail address of Data Logger Light		Set mail address of Data Logger Light.
②	SMTP server		Input IP address or name of SMTP server.
③	Authentication	Not need to authenticate	It doesn't authenticate when sending mail.
		POP before SMTP(Standard)	Account: Max. 48 letters Password: Max. 16 letters POP server: Max. 48 letters
		POP before SMTP(APOP)	
		SMTP AUTH	Account: Max. 48 letters Password: Max. 16 letters
④	Connected time-out		Set time-out time. Select from 30,60,90,120,300 sec.
⑤	Retry interval		Set retry interval to send mail. Select from 0,1,2,3,4,5,10,15,30,60 min.
⑥	Retry frequency		Set retry frequency to send mail. Select from the range of 0 to 10 times.
⑦	The order of data row of attached file		Ascending, Descending

Note

*1 SMTP over SSL/TLS is not supported.

Point

Confirm to your network system administrator about each setting.

What is "POP before SMTP"?

It is a method of authorization to use SMTP server by accessing beforehand to an appointed POP3 server (protocol for receiving mail from server that saves e-mail.) before sending.
The part of password in not coded with "Standard" and the part of password is coded with "APOP".

What is “SMTP AUTH”?

It gives an authorization to send mail only when it authorizes user account and password with user at sending mail (connecting to SMTP server).
However, it is necessary that both server and client are support it.

About “The order of data row of attached file”

It can sort data in file to be attached to mail.

	A	B	C	D	E	F
1	Date	Time	1	2	3	
2			Integrated	Temp.	Water	
3			COM1	COM1	COM1	
4			DT100	DT16	DT154	
5			MOMENT	MOMENT	DIFFERENCE	
6			US32 -> FLT	S16 -> FLT	US16 -> FLT	
7			kWh	℃	L	
	2010/8/1	0:15:00	78015.23	27.2	80	
	2010/8/1	0:30:00	78015.45	27.2	50	
	2010/8/1	0:45:00	78015.7	27.3	40	
	2010/8/1	1:00:00	78015.88	27.7	50	
	2010/8/1	1:15:00	78016.12	27.8	50	
	2010/8/1	1:30:00	78016.32	27.7	60	
	2010/8/1	1:45:00	78016.6	27.3	60	
	2010/8/1	2:00:00	78016.88	27.2	40	
	2010/8/1	2:15:00	78017.08	27.1	50	
	2010/8/1	2:30:00	78017.25	27.1	50	
	2010/8/1	2:45:00	78017.44	27.2	40	
1	2010/8/1	3:00:00	78017.71	27.2	50	

Ascending

	A	B	C	D	E	F
1	Date	Time	1	2	3	
2			Integrated	Temp.	Water	
3			COM1	COM1	COM1	
4			DT100	DT16	DT154	
5			MOMENT	MOMENT	DIFFERENCE	
6			US32 -> FLT	S16 -> FLT	US16 -> FLT	
7			kWh	℃	L	
	2010/8/1	3:00:00	78017.71	27.2	50	
	2010/8/1	2:45:00	78017.44	27.2	40	
	2010/8/1	2:30:00	78017.25	27.1	50	
	2010/8/1	2:15:00	78017.08	27.1	50	
	2010/8/1	2:00:00	78016.88	27.2	40	
	2010/8/1	1:45:00	78016.6	27.3	60	
	2010/8/1	1:30:00	78016.32	27.7	60	
	2010/8/1	1:15:00	78016.12	27.8	50	
	2010/8/1	1:00:00	78015.88	27.7	50	
	2010/8/1	0:45:00	78015.7	27.3	40	
	2010/8/1	0:30:00	78015.45	27.2	50	
	2010/8/1	0:15:00	78015.23	27.2	80	

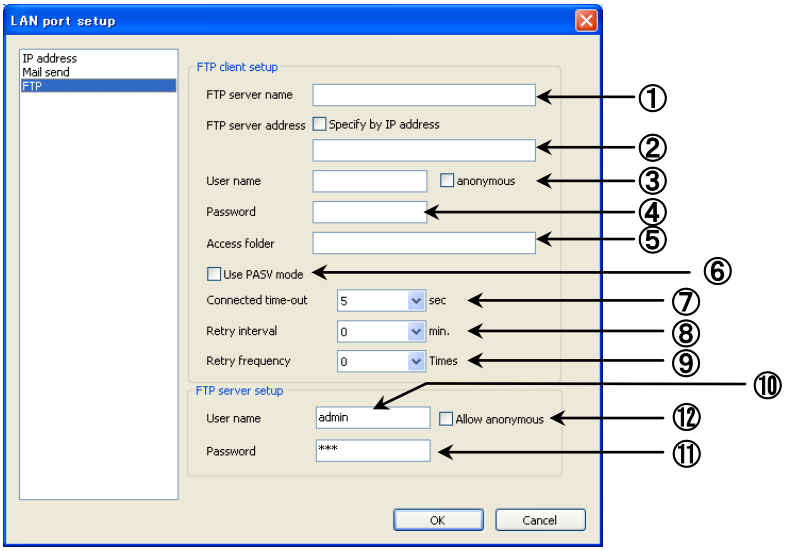
Descending

Note

・Only attached file is available.
・Sequence is changed in attached file, but logging file and CURRENT file in SD memory card or internal memory is not changed (ascending).

■FTP

It sets items for FTP.
FTP is network protocol in order to use for transmitting file between a server and a client.
It is necessary to upload files from Data Logger Light to server or download file data from Data Logger Light.



	Item		Contents
①	FTP client setup	FTP server name	Input FTP server name. Input range: Max. 32 letters of half size alphabetic letter,_.-@
②		FTP server address	Input FTP server address. Input range: Max. 64 letters of half size alphabetic letter, _.-@<>!#$%&()=
③		User name	Input user name for FTP server Input range: Max. 32 letters
		Anonymous	Check when anonymous is used.
④		Password	Setup password for FTP server Input range: Max. 32 letters of half size alphabetic letter,_.-@
⑤		Access folder	Setup access folder. *1 Input range: Max. 128 letters of half size alphabetic letter
⑥		PASV mode	Check box when PASV is used.
⑦		Connected time-out	Setup time for time-out. Select from 5,10,15,30,60,90,120,300 sec.
⑧		Retry interval	Setup retry interval. Select from 0,1,2,3,4,5,10,15,30,60 min.
⑨		Retry frequency	Select retry frequency for sending mail. Select from 0 to 10 times.
⑩	FTP server setup	User name	Input user name Input range: Max. 32 letters of half size alphabetic letter,_.-@ <initial> admin
⑪		Password	Setup password. Input range: Max. 32 letters of half size alphabetic letter,_.-@ <initial> dlu
⑫		Allow anonymous	Check box when anonymous is used.

Note

*1 Data Logger Light doesn't make folder for FTP server. It is necessary to make folder to access.

Point

Confirm to your network system administrator about each setting.

What is "anonymous"?

If you input "anonymous" as user name and your mail address as password, you can use FTP service without an account.
There is a custom of input one's mail address as a password to login.
It is used for open data to unspecified number of public widely.

What is "PASV"?

It is one of the communication modes to use with FTP.
In normal mode, server requests connection for data transmission to client after connecting client to server and it communicates using this connection.
However, when the client is behind a firewall, it is unable to accept incoming request directly from outside. When using PASV mode, client connect to server first and the client requests connection again. Herewith the request is always from client to server. Therefore it there is a firewall, it is possible to transmit files.

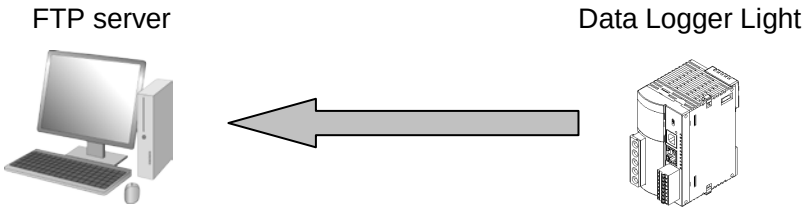
Point

Password in this window is the password to access Data Logger Light with FTP or to access FTP server.
It is different from the password to update setup data or firmware.

FTP Client function

Created files can be transmitted to FTP server from Data Logger Light when logging file or system history file or trigger history file is created.

Ex.)



*Confirm your server manager about each settings.

Reference

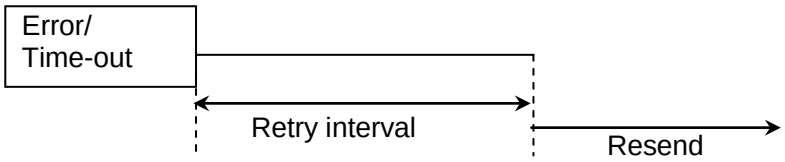
<7.2.4 Logging file setup>
<8.1.2 System history file>
<8.1.3 Trigger history file>

‘Connected time-out’ ‘Retry interval’ ‘Retry frequency’

In case of using FTP client function, it can retry with the above settings.

［Retry conditions］

・E0071: Log in error
・E0072: PASV mode change error
・E0073: Directory change error
・E0075: Send error

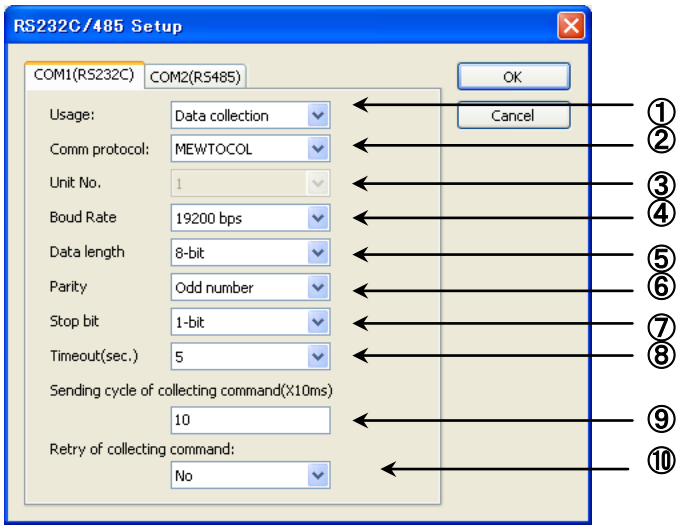


*When it sent the setting retry frequency and the result is error, it will record error history.

7.2.11 RS232C/RS485 setup

It sets items for RS232C/RS485 communication.
Set communication conditions between Data Logger Light and connected device.

Set the conditions according to that of connected device.



Item	Contents	Initial
① Usage	・Data collection: Collect data from our Eco-POWER METER, PLC and so on. Select at data setup. ・Computer link: Use to monitor data in Data Logger Light by connecting a display.	Data collection
② Communication protocol	MEWTOCOL, MODBUS *1	MEWTOCOL
③ Unit No. *2	Set its unit No. Selectable range: 1 to 99	—
④ Baud Rate	4800,9600,19200,38400,57600,115200bps	19200bps
⑤ Data length	7-bit, 8-bit	8-bit
⑥ Parity	Odd, Even, None	Odd
⑦ Stop bit	1-bit, 2-bit	1-bit
⑧ Timeout (sec) *3	1 to 60	5
⑨ Sending cycle of collecting command (x10ms)	0 to 9999 (When 0 is set, it means best effort.)	10
⑩ Retry of collecting command	Yes, No	Yes

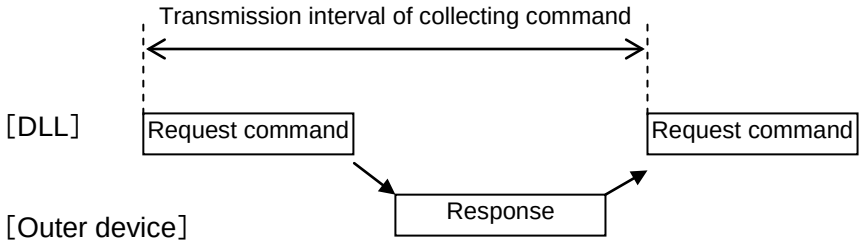
Note
*1 COM1(RS232C) and COM2(RS485) can be set separately.
Note that if the protocol is switched, all the related settings will be deleted.
*2 It can be set when the usage is set to “Computer link”.
*3 It is recommended that set timeout to long when connecting a wireless device.
*4 In the case of MODBUS, please set the data length to 8 bits.

What is “best effort”?

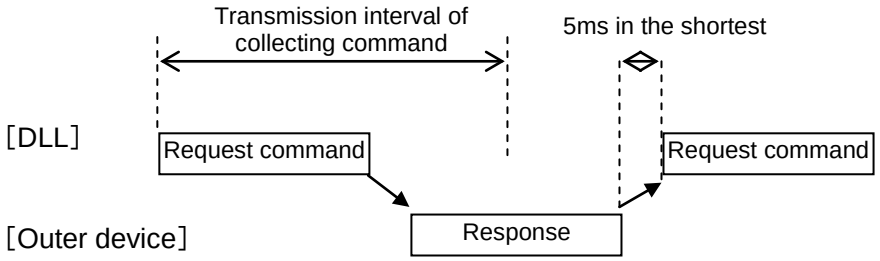
At network connection, when several person connect at the same time, the execute speed is changed. It communicates with best communication cycle among these.

About “transmission interval of collecting command”

DLL is always sampling data during RUN mode regardless the setting logging cycle.



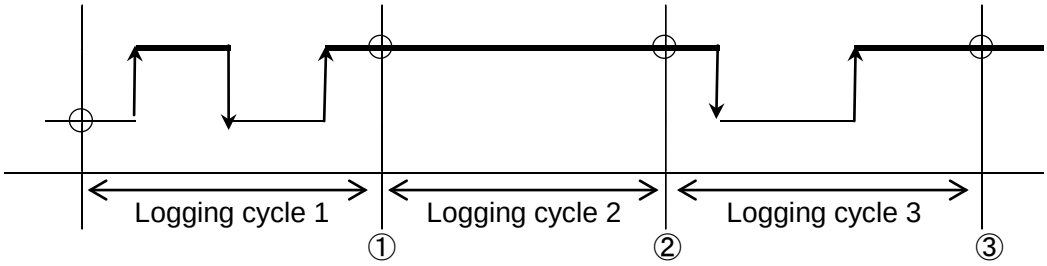
When it is receiving the response of it is timed out even if it passes “transmission interval of collecting command”, it send the next request command after 5ms in the shortest.



7.2.12 Details of data to be logged

[Relay]
Logging ways are selected from the below.
1) Inst.value 2) Accumulated ON time 3) Total switching times 4) ON status/ OFF status

○ : Inst.value
——— : Accumulated ON time



1) Inst.value: ON/OFF status of relays is recorded for every logging cycle.
Data recorded in file is “1” in on-state and “0” in off-state.

2) Accumulated ON time: Time when relay turns on is recorded for every logging cycle.

Ex.)

Time	Data
ON time of logging cycle 1 : 3 seconds	Data recorded at the point of ① : 3
ON time of logging cycle 2 : 6 seconds	Data recorded at the point of ② : 9
ON time of logging cycle 3 : 2 seconds	Data recorded at the point of ③ : 11

3) Total switching times: Number of switching times of relay is recorded for every logging cycle.
Counting condition can be selected from the below.
- Leading edge (OFF→ON)
- Trailing edge (ON→OFF)
- Both edge differential (ON⇔OFF)

Ex.) In case of that the counting condition is set to “Leading edge (OFF→ON)”

Times	Data
Switching times of logging cycle 1 : 2 times	Data recorded at the point of ① : 2
Switching times of logging cycle 2 : 0 time	Data recorded at the point of ② : 2
Switching times of logging cycle 3 : 1 time	Data recorded at the point of ③ : 3

Note
Total switching times is cleared at the timing below.
- Change operation mode RUN to STOP
- Power ON to OFF

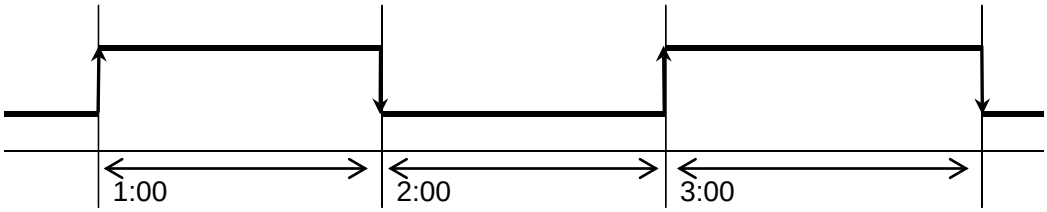
4) ON status/ OFF status: Detect status when it keeps ON status or OFF status more than 200ms.
It is used effectively by combination of other conditions.

Ex.) Fixed Cycle: 1 hour ＋ ON status

It starts logging when it passes 100ms from 1:00, 3:00.

It logs data of 1 hour from 1:00 and 3:00 and it does not log data of 1 hour from 2:00.

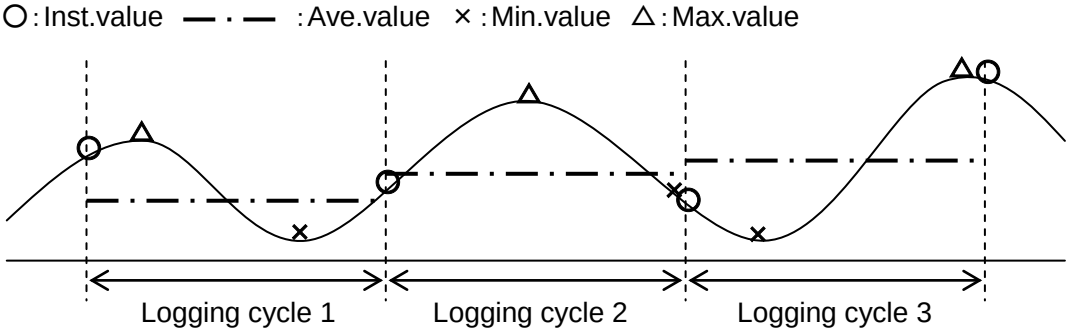
It can be used that it logs a fixed period.



[Register]

Logging ways are selected from the below.

1) Inst.value 2) Ave.value 3) Min.value 4) Max.value 5) Diff.value



1) Inst.value: Latest value for every logging cycle are recorded.

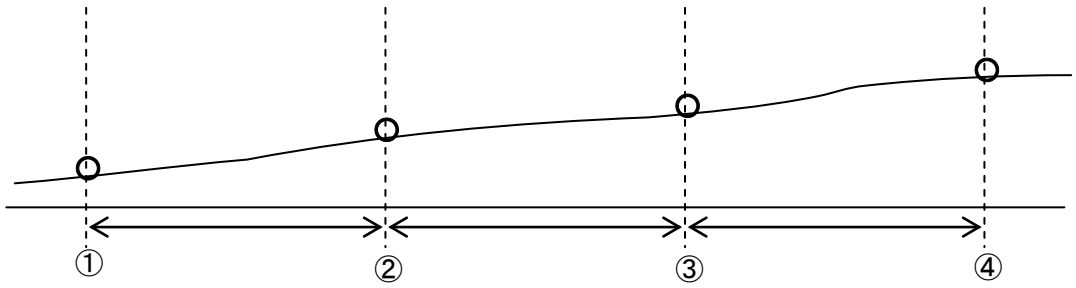
2) Ave.value: Average values are calculated from sampling data in logging cycles and recorded for every logging cycle.

3) Min.value: Minimum values are calculated from all sampling data in logging cycles and recorded for every logging cycle.

4）Max.value: Maximum values are calculated from all sampling data in logging cycles and recorded for every logging cycle.

Note

Regardless of a specified logging cycle, Data Logger Light checks the status to send commands every 10ms. If it can send command, it sends command after completing waiting for receiving and waiting for sending 5 ms.
Therefore, the values are not always calculated by same number of data according to the communication conditions.



5) Diff.value : Values subtract previous values are recorded for every logging cycle.
It can be used for application that collect an integrated electrical power (DT100) and record using electrical power at a fixed time interval.

Ex.)

No.	Inst.value	Diff. value
①	100	(Value that subtract the previous value from 100)
②	150	50 (②－①)
③	180	30 (③－②)
④	190	10 (④－③)

Note

When it is used with difference value, specify a digit number.
Ex.)
When digit number is specified “3”, max value of the logging device is “999” for Data Logger Light.
Therefore, when value at ① is “100” and value at ② is “50”, Data Logger Light considers value at ② as “1050” and the result of ② minus ① is “950”.
If digit number is not specified, the result of ② minus ① is “-50”. But it is “0xFFFFFFCE=4294967246” for DEC2W(No code of data type and it is “0xFFCE=65486” for DEC2W(No code)”.

For data type ‘DEC4W’ or ‘DEC4W(No code)’, when the digit number of difference value is 15 or more, it doesn’t calculate correctly.

7.2.13 Trigger setup

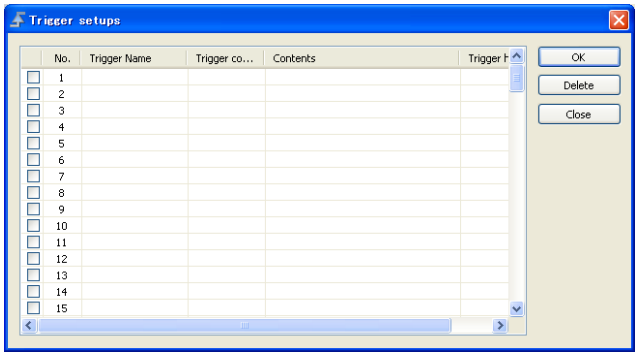
It is necessary to set timing to execute in order to log data, update file, setup data or send mail by Data Logger Light.
The timing is called “trigger”.

There are following types for the trigger.

Trigger type	Contents	
Fixed Cycle	・Occur every hour on the hour ・Start counting soon after RUN	second, minute, hour (Specified any time.)
Appointed time	・Per Minute (Appoint the second for every minute.) ・Per Hour (Appoint the minute and second for every hour.) ・Every week (Appoint the time for every week (possible to appoint day)) ・Every day (Appoint the time for every day.) ・Every month (Appoint the date and time for every month.) ・Every year (Appoint the date and time for every year.) ・Appointed time (Appoint date and time.)	
Relay	・Leading edge (OFF to ON) ・Trailing edge(ON to OFF) ・Both edge differential ・Accumulated ON time ・Total switching times ・ON status ・OFF status	
Register	・= (equal to condition value) ・> (more than condition value) ・< (less than condition value) ・≠ (different to condition value)	
Combination	・Specify with “AND” or “OR” for 2 trigger.	

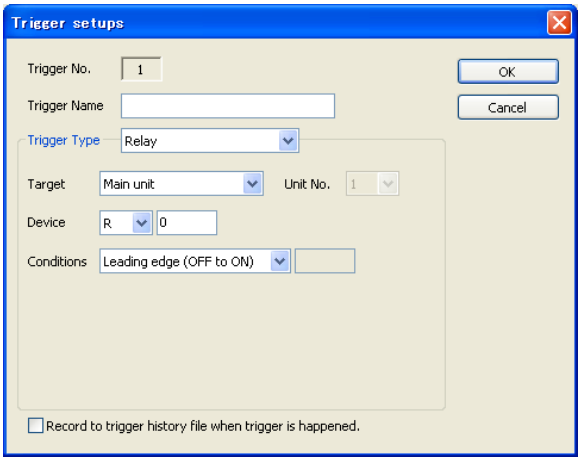
[How to set]

1) Double-click row of No. to setup.



・Max. 128 types of trigger can be set.

2) Input trigger name and select trigger type.
Set items for selected trigger type.
After completing all input, click “OK”.



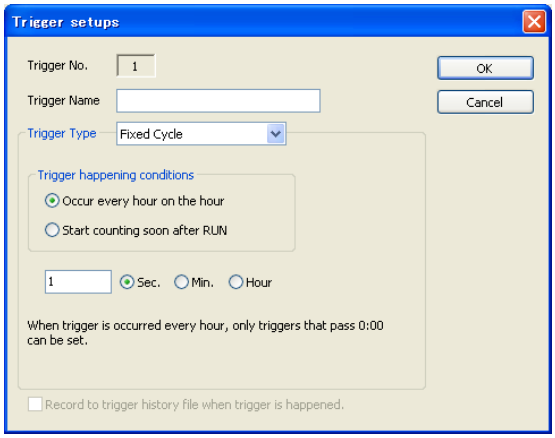
Item	Contents
Trigger Name	Input name of trigger. Input range: Max. 32 letters
Record to trigger history file when trigger is happened.	Check box to record to trigger history file when it occurs trigger.

Note

“Record to trigger history file when trigger is happened.” is available only when “Relay”, “Register” or “Combination” is selected.

■Fixed Cycle

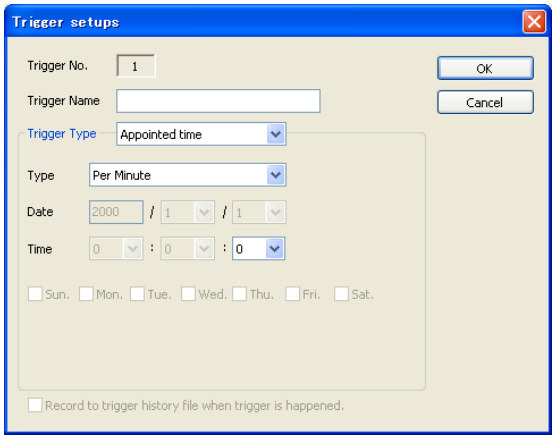
Select “Fixed Cycle” at Trigger Type. It occurs trigger every cycle.



Trigger happening conditions	Contents
Occur every hour on the hour	It occurs trigger based on every hour sharp. Ex.1) When set to 5 seconds. Trigger occurrence time: 0, 5, 10,・・・・50, 55 seconds for every minute Ex.2) When set to 15 minutes. Trigger occurrence time: 0, 15, 30, 45 minute for every hour
Start counting soon after RUN	It starts counting at changing to RUN mode. Ex.1) When set to 5 seconds and change to RUN mode at 12:15:20 Trigger occurrence time:12:15:25, 12:15:30, 12:15:35・・・ Ex.2) When set to 15 minutes and change to RUN mode at 12:10:00 Trigger occurrence time:12:25:00, 12:40:00・・・

■Appointed time

Select “Appointed time” at Trigger Type. It occurs trigger at the appointed time.



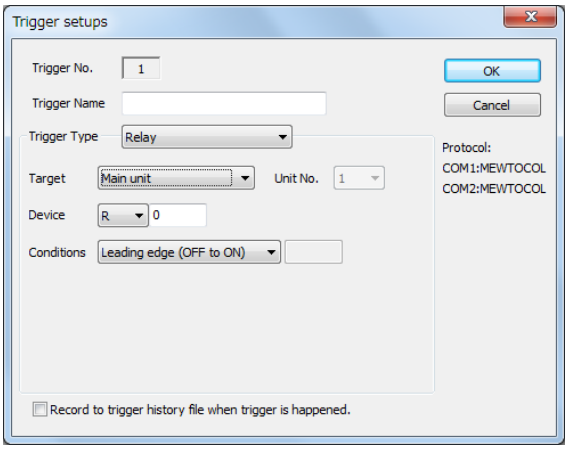
The following appointments are available.

Item	Contents
Per Minute	Appoint the second for every minute.
Per Hour	Appoint the minute and second for every hour.
Every week	Appoint the time for every day.
Every day	Appoint the time for every day.
Every month	Appoint the date and time for every month.
Every year	Appoint the date and time for every year.
Appointed time	Appoint date and time.

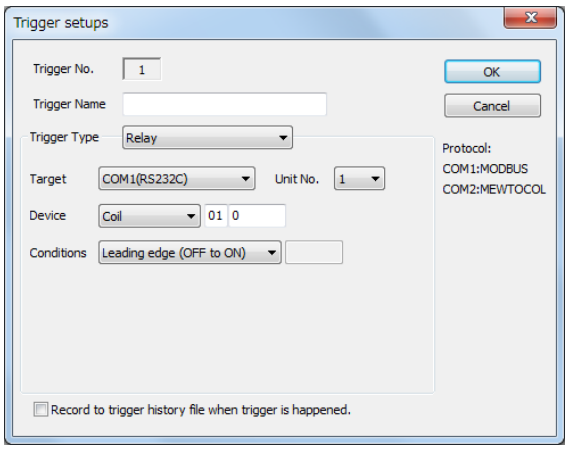
■Relay

Select “Relay” at Trigger Type. It occurs trigger according to the status of relay.

[MEWTOCOL]



[MODBUS]



It is available to set as below.

Target		Device
Main unit		R
MEWTOCOL	COM1(RS232C)	X,Y,R,L,T,C
	COM2(RS485)	
MODBUS	COM1(RS232C)	Coil
	COM2(RS485)	

Condition	Contents
Leading edge (OFF to ON)	It occurs trigger when it detects the change of OFF to ON.
Trailing edge(ON to OFF)	It occurs trigger when it detects the change of ON to OFF.
Both edge differential	It occurs trigger when it detects the change of OFF to ON or ON to OFF.
Accumulated ON time (Specify second)	It occurs triggers when total time of detection ON status is over the specified time.
Total switching times (Specify time)	It occurs trigger when total switching times of OFF to ON is over the specified time.
ON status *1	It occurs trigger with ON status.
OFF status *1	It occurs trigger with OFF status

Note

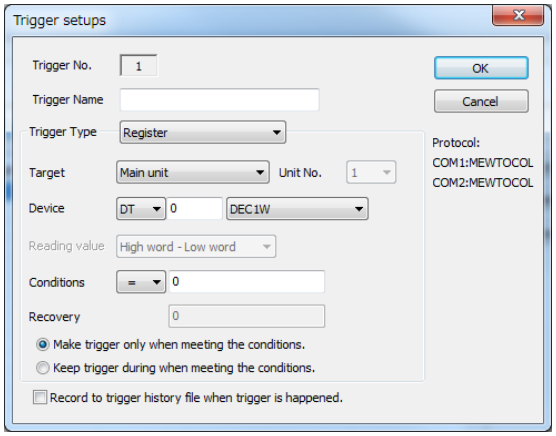
*1 It judges for trigger every about 100ms.

Target	Contents
Record to trigger history file when trigger is occurs.	It creates trigger history file and saves in trigger history file when it occurs trigger.

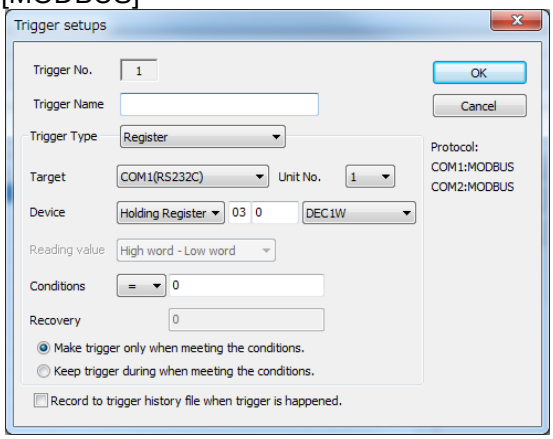
■Register

Select “Register” at Trigger Type.
When it meets the condition after comparing setting register value and condition value, it occurs trigger.

[MEWTOCOL]



[MODBUS]



It is available to set as below.

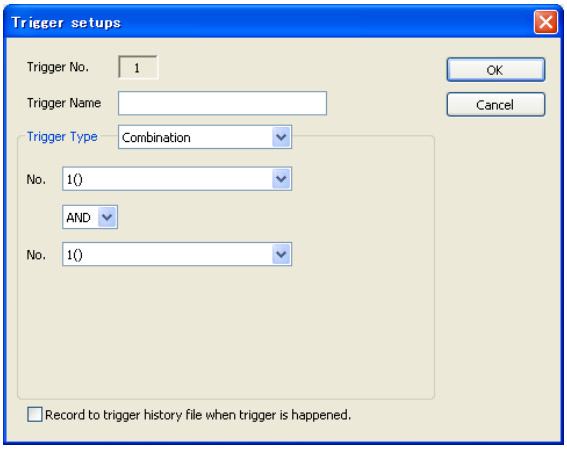
Target		Device	
Main unit		WR,DT	・DEC1W ・DEC1W(No code) ・HEX4 digits ・DEC2W ・DEC2W(No code) ・HEX8 digits ・DEC4W ・DEC4W(No code)
MEWTOCOL	COM1(RS232C)	WX,WY,WR, WL,DT,LD, SV,EV,FL	
	COM2(RS485)		
MODBUS	COM1(RS232C)	Holding register	
	COM2(RS485)		

Condition	Contents
Make trigger only when meeting the conditions.	It occurs trigger when it meets conditions.
Keep trigger during when meeting the conditions.	It occurs and keeps trigger during it meets conditions.

Note
Set with real value not conversion value for the conditions.

■Combination

Select “Combination” at Trigger Type.
Set to combine 2 type of trigger and it occurs trigger when it meets both conditions.

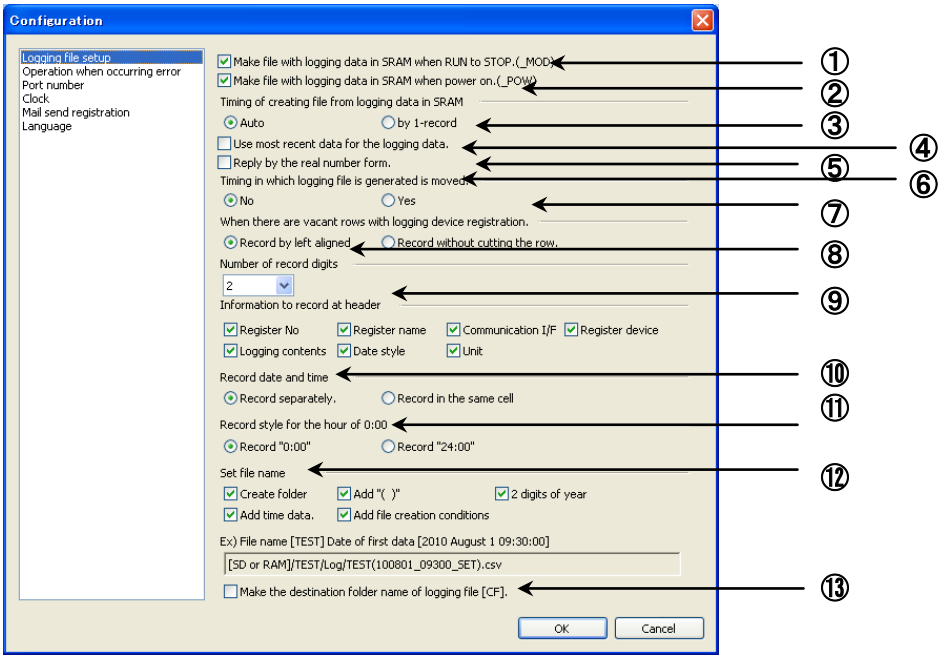


7.2.14 Configuration

You can set the following items for configuration.

1) Logging file setup : Set conditions to create logging file.
2) Operation when occurring error : Set operations when error is occurred.
3) Port number : Set port number of each protocol.
4) Clock : Set time of Data Logger Light.
5) Mail send registration : Register user to send mail.
6) Language : Change displayed language.

■Logging file setup



[Initial]

	Contents	Initial
①	Make file with logging data in SRAM when RUN to STOP.(_MOD)	Available
②	Make file with logging data in SRAM when power on.(_POW)	Available
③	Timing of creating file from logging data in SRAM	Auto
④	Use most recent data for the accumulation data	Available
⑤	Reply by the real number form.	Not available
⑥	Timing in which logging file is generated is moved.	No
⑦	When there are vacant rows with logging device registration.	Record by left aligned
⑧	The number below a decimal point	2
⑨	Information to record at header	Available all
⑩	Record date and time	Record separately.
⑪	Record style for the hour of 0:00	Record "0:00"
⑫	Set file name	Available all
⑬	Make the destination folder name of logging file [CF].	Not available

①Make file with logging data in SRAM when RUN to STOP.(_MOD)

"_MOD" file is created even if the number of logging data is not reached to the appointed record number when mode switch is changed RUN to STOP.

Ex.) sekisan(100801_001500_MOD).csv

Note

There is the case that data lack when I exclude a check. But frequently mode reshuffling Please be careful when I perform it because there is the case more than the save file numbers.

②Make file with logging data in SRAM when power on.(_POW)

CURRENT file is renamed to "_POW" when Data Logger Light turns on and there is a CURRENT file.

Ex.) sekisan(100801_001500_POW).csv

Note

There is the case that data lack when I exclude a check. But frequently mode reshuffling Please be careful when I perform it because there is the case more than the save file numbers.

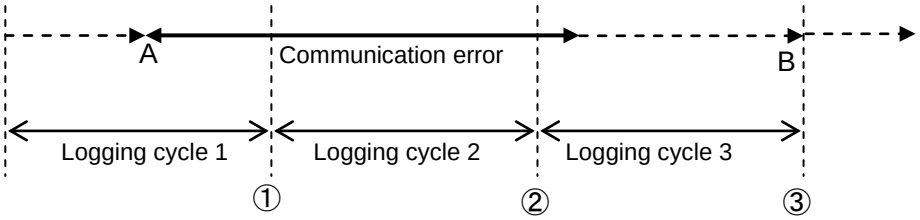
③Timing of creating file from logging data in SRAM

Auto : When 64 records are logged in SRAM, it creates file.
By 1-record :When 1 record is logged, it creates file.

④Use most recent data for the accumulation data

DLL is always sampling data regardless the setting logging cycle.
In this setting, you select that the collecting data is logged or not logged when it occurs the logging trigger. It is useful when communication error is happened when it occurs the logging trigger.

Ex)



- - - - - - - ►:Sampling

Set to "OFF"

At ①:Data is not collected due to communication error.
At ②:Data is not collected due to communication error.
At ③:Log the data "B".

Set to "ON"

At ①:Log the most recent data "A" due to communication error.
At ②:Data is not collected due to communication error during logging cycle 2.
At ③:Log the most recent data "B".

⑤Reply by the real number form.

It replies by the real number form when reading data from upper communication of Data Logger Light. Use this when conversion value is displayed on the current value monitor and conversion value is acquired from the internal register.

⑥Timing in which logging file is generated is moved.

It creates file by delaying timing.

Ex.) Update file trigger: 10 records

No: It creates “CURRENT file” up to 9th record and creates logging file at 10th record.

Yes: It creates “CURRENT file” up to 10th records, logging file with 1st to 10th record at 11th record, “CURRENT file” with 1 record.

⑦When there are vacant rows with logging device registration.

・Record by left aligned : Logging data is recorded by left aligned.

・Record without cutting the row : It records without cutting the row.

	A	B	C	D	E
1	Date	Time	1	2	3
2			Integrated	Temp.	Water
3			COM1	COM1	COM1
4			DT100	DT16	DT154
5			MOMENT	MOMENT	DIFFERENCE
6			US32 -> FLT	S16 -> FLT	US16 -> FLT
7			kWh	℃	L
8	2010/8/1	0:15:00	78015.23	27.2	80
9	2010/8/1	0:30:00	78015.45	27.2	50
10	2010/8/1	0:45:00	78015.7	27.3	40
11	2010/8/1	1:00:00	78015.88	27.7	50
12	2010/8/1	1:15:00	78016.12	27.8	50
13	2010/8/1	1:30:00	78016.32	27.7	60
14	2010/8/1	1:45:00	78016.6	27.3	60
15	2010/8/1	2:00:00	78016.88	27.2	40
16	2010/8/1	2:15:00	78017.08	27.1	50
17	2010/8/1	2:30:00	78017.25	27.1	50
18	2010/8/1	2:45:00	78017.44	27.2	40

In case of “Record by left aligned”

	A	B	C	D	E
1	Date	Time	1		3
2			Integrated		Water
3			COM1		COM1
4			DT100		DT154
5			MOMENT		DIFFERENCE
6			US32 -> FLT		US16 -> FLT
7			kWh		L
8	2010/8/1	0:15:00	78015.23		80
9	2010/8/1	0:30:00	78015.45		50
10	2010/8/1	0:45:00	78015.7		40
11	2010/8/1	1:00:00	78015.88		50
12	2010/8/1	1:15:00	78016.12		50
13	2010/8/1	1:30:00	78016.32		60
14	2010/8/1	1:45:00	78016.6		60
15	2010/8/1	2:00:00	78016.88		40
16	2010/8/1	2:15:00	78017.08		50
17	2010/8/1	2:30:00	78017.25		50
18	2010/8/1	2:45:00	78017.44		40

In case of “Record without cutting the row”

Note

In case of using our “KW Watcher”, we recommend “Record by left aligned”.

⑧The number below a decimal point

When data with real number style is recorded in logging file, specify digit number below a decimal point.

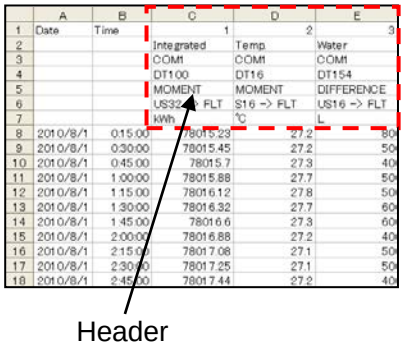
Specified range: 0 to 6

⑨Information to record at header

Select information added to header of the logging file.

[Ex.]

Header	Item
1	Reg. No.
Integrated	Register name
COM1	Communication I/F
DT100	Register device
MOMENT	Logging contents
FLT	Data style
kWh	Unit



	A	B	C	D	E
1	Date	Time	1	2	3
2			Integrated	Temp.	Water
3			COM1	COM1	COM1
4			DT100	DT16	DT154
5			MOMENT	MOMENT	DIFFERENCE
6			US32 -> FLT	S16 -> FLT	US16 -> FLT
7			kWh	℃	L
8	2010/8/1	0:15:00	78015.23	27.2	80
9	2010/8/1	0:30:00	78015.45	27.2	50
10	2010/8/1	0:45:00	78015.7	27.3	40
11	2010/8/1	1:00:00	78015.88	27.7	50
12	2010/8/1	1:15:00	78016.12	27.8	50
13	2010/8/1	1:30:00	78016.32	27.7	60
14	2010/8/1	1:45:00	78016.6	27.3	60
15	2010/8/1	2:00:00	78016.88	27.2	40
16	2010/8/1	2:15:00	78017.08	27.1	50
17	2010/8/1	2:30:00	78017.25	27.1	50
18	2010/8/1	2:45:00	78017.44	27.2	40

Header

Point

Indications of logging contents and data style

Letters to record in file	Logging contents
STATUS	Inst.value (Relay)
TOTAL ON TIME	Accumulated ON time
TOTAL SW TIMES	Total switching times
MOMENT	Inst.value
AVERAGE	Ave.value
MINIMUM	Min.value
MAXIMUM	Max.value
DIFFERENCE	Diff.value

Letters to record in file	Data style
S16	DEC1W
US16	DEC1W(No code)
HEX4	HEX4 digits
S32	DEC2W
US32	DEC2W(No code)
HEX8	HEX8 digits
FLT	Real number
S64	DEC4W
US64	DEC4W(No code)

Note

・In case of converting the logging device, data style is displayed as “US16→FLT” (style before conversion→style after conversion)

⑩Record date and time

・Record separately. : Record date and time separately.

[Ex.]

2010/8/1	15:30:00

・Record in the same cell : Record date and time in the same cell.

[Ex.]

2010/8/1 15:30:00

Note

In case of using our “KW Watcher”, select “Record separately”.

⑪Record style for the hour of 0:00

・Record "0:00" : 1 hour after "1st 23:00" is "2nd 0:00".
・Record "24:00" : 1 hour after "1st 23:00" is "1st 24:00".

Note
In case of using our "KW Watcher", select "Record "0.00"".

⑫Set file name

Select items to name a logging file.
It doesn't use to name the items without check box.
[Ex.]
File name: "TEST"
The date of the first data: August 1 2010 09:30:00
Folder construction [SD or RAM]／TEST／Log／TEST(100801_09300_SET).csv

・Create folder : "／Log"
・Add "( )" : "( )"
・Add time data : "_09300"
・Add file creation conditions: "_SET"
・2 digits of year : "100801" 2 digits: 100801
4 digits: 20100801

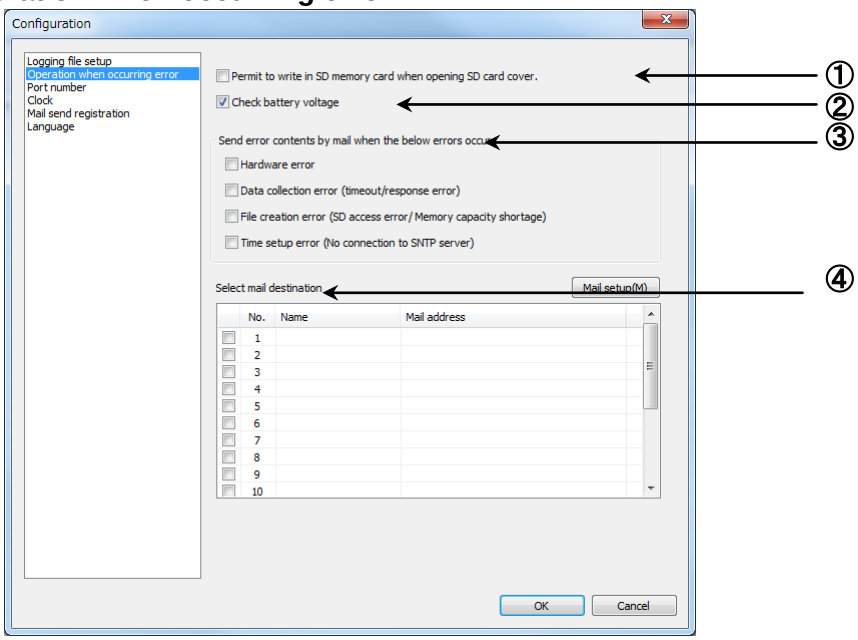
Note
・In case of using our "KW Watcher", check all boxes.
If even one box is unchecked, it can't download data because the path name is different.
・If "Create folder" is not checked, files will be created under directly [SD or RAM]. In this case, only 128 files will be created.
If "Create folder" is not checked, format SD memory card with FAT32.

⑬Make the destination folder name of logging file [CF].

Check this box, destination folder name of logging file will be "CF".
[Ex.]
CF／TEST／Log／TEST(100801_09300_SET).csv

Note
Our "KW Watcher" downloads data under CF folder.
In case of using "KW Watcher", check this box.
It is available when the destination is set to internal memory.

■Operation when occurring error



[Initial]

Item			Initial
①	Permit to write in SD memory card when opening SD card cover.		Not available
②	Check battery voltage		Available
③	Send error contents by mail when the below errors occur.	Hardware error	Not available
		Data collection error	Not available
		File creation error	Not available
		Time setup error	Not available

①Permit to write in SD memory card when opening SD card cover.

It is possible to write SD memory card even if the cover is opened.
Use this function when the cover is missing or damaged temporary.
It is the function to avoid removing and inserting SD memory card, uncheck this box normally.

Note

When you'd like to remove SD memory card during check this box, confirm that it doesn't access SD memory card by SD access indicator LED. If you remove SD memory card during access, it might damage data.

②Check battery voltage

It checks the battery voltage.

Note

When logging file is saved in the internal memory or internal calendar is used, be sure to check this box.

③Send error contents by mail when the below errors occur.

When one of the selected errors as below occurs, it can send mail to the appointed mail address.

Item
Hardware error
Data collection error (timeout/response error)
File creation error (SD access error/ Memory capacity shortage)
Time setup error (No connection to SNTP server)

④Select mail destination

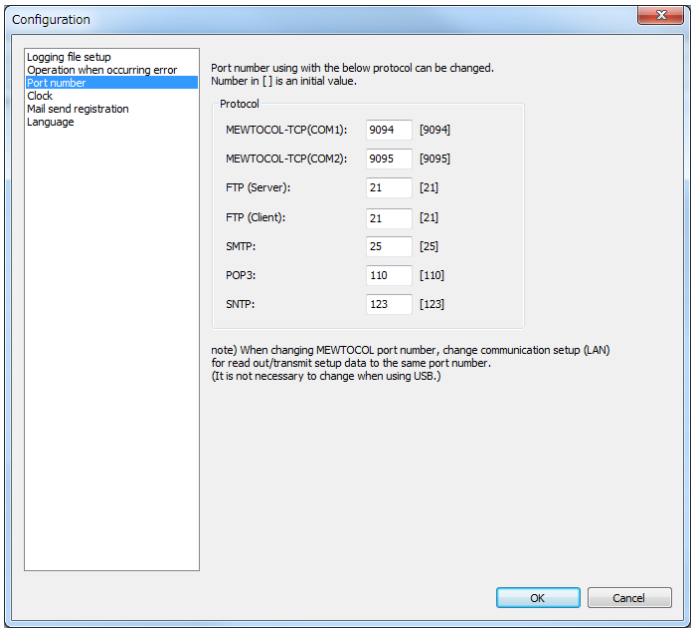
Click to check box of address to send mail.
(In order to delete the mailing list, remove check by click box again.)

Reference

<7.2.7 Mail sending setup>

■Port number

It sets port number of each protocol.


Configuration
Logging file setup
Operation when occurring error
Port number
Clock
Mail send registration
Language
Port number using with the below protocol can be changed.
Number in [ ] is an initial value.
Protocol
MEWTOCOL-TCP(COM1): 9094 [9094]
MEWTOCOL-TCP(COM2): 9095 [9095]
FTP (Server): 21 [21]
FTP (Client): 21 [21]
SMTP: 25 [25]
POP3: 110 [110]
SNTP: 123 [123]
note) When changing MEWTOCOL port number, change communication setup (LAN)
for read out/transmit setup data to the same port number.
(It is not necessary to change when using USB.)
OK
Cancel

[Initial]

Item	Port number
MEWTOCOL-TCP(COM1)	9094
MEWTOCOL-TCP(COM2)	9095
FTP(server)	21
FTP(client)	21
SMTP	25
POP3	110
SMTP	123

What is “Port number”?

IP address is identified the computer and port number is identified the service.

Port number is classified to 3 as below.

Port number	Name	Object
0 to 1023	Well known port	Popular port number
1024 to 49151	Registration port	Registered port number
49152 to 65535	Dynamic/Private port	Port number to use free

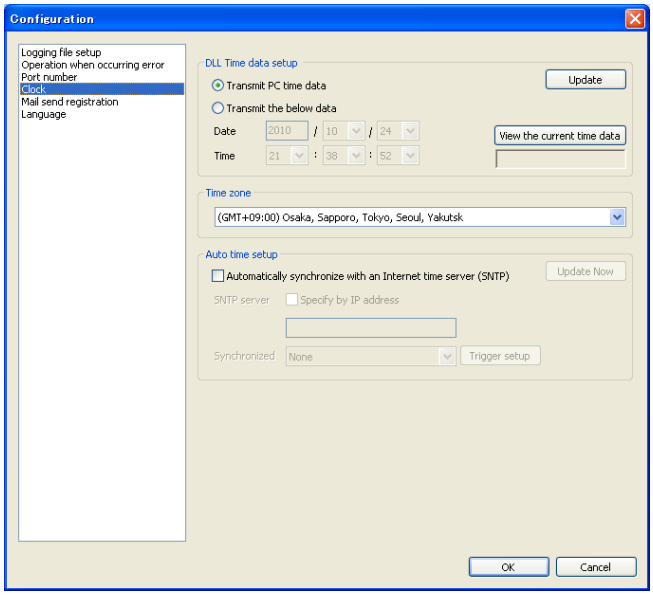
Initial value is popular port number.
In order to improve security or avoid double the port, some system configuration has other port numbers except the initial value.
Confirm to your system administrator about port number.

Note

When port number of MEWTOCOL is changed, change port number of LAN setting for “Transmit data” and “Read out data” to same number.

■Clock

It sets date and time in Data Logger Light.
Unstable data is set at initial. Be sure to set the correct date and time before use.



●DLL time data setup

Select the way to transmit.

Item	Contents
Transmit PC time data	Transmit date and time set to PC.
Transmit the below data	Transmit date and time that is set in this point.

・Update : Transmit selected data to Data Logger Light
・View the current time data: Read out the date and time in Data Logger Light and display it.

Reference

<7.2.8 Transmit to Data Logger Light >

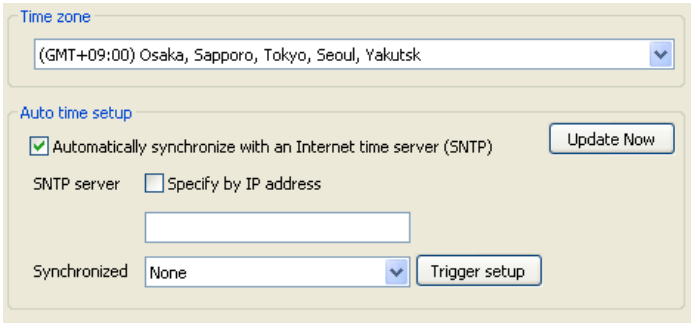
Note

Be sure to mount backup battery and check the battery voltage. (Refer to 7.2.14)

●Auto time setup

It obtains time automatically by using time server.

Check box of “Automatically synchronize with an Internet time server (SNTP)” to use.



Item	Contents
Time zone	Select time zone
SNTP server *1	Input SNTP server address. When it is specified by IP address, check box of “Specify by IP address”.
Synchronized	Select synchronized trigger.

Note

*1 Confirm your system administrator about SNTP server address.

What is “Time zone”?

A time zone is a region on Earth where uses same standard time, usually referred to as the local time. By convention, the 24 main time zones on Earth compute their local time as an offset from UTC (see also Greenwich Mean Time).

In Japan, it is +0900.

What is “SNTP server”?

It is protocol that is used for synchronizing time of computer or network device using network.

SNTP server sends clock value for inquiring time adjustment from a client.

It is not necessary to adjust clock manually by using this function.

Note

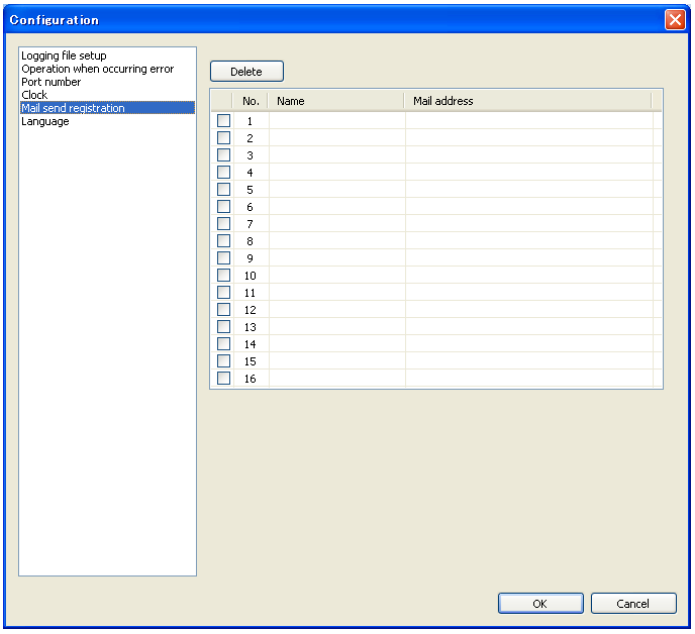
Synchronize trigger for SNTP should be set to different timing from the logging trigger and create new file timing trigger. If you set same timing and the clock is back as a result of synchronize, it will occur the logging trigger and create new file trigger and record data with same time stamp.

■Mail send registration

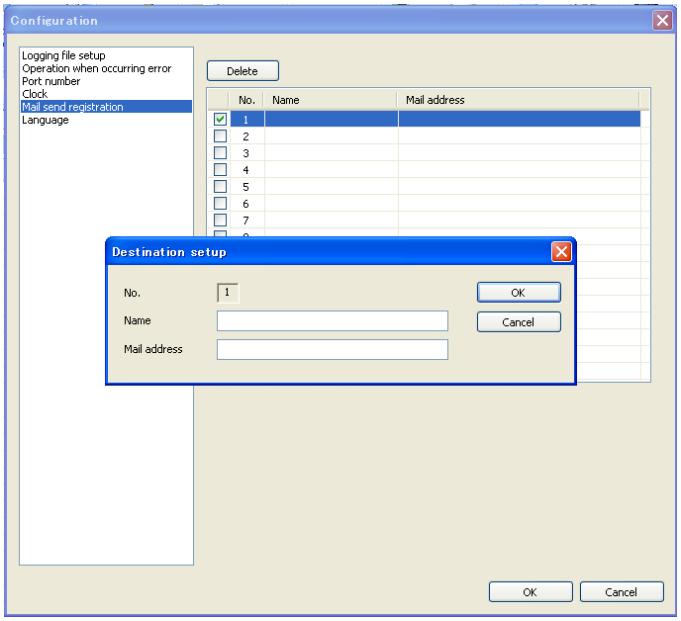
It registers users to destination of mail.
Max. 16 users are registered.

[How to set]

1) Click row of No. to register.



2) Input destination user name and mail address.
After that, click “OK”.



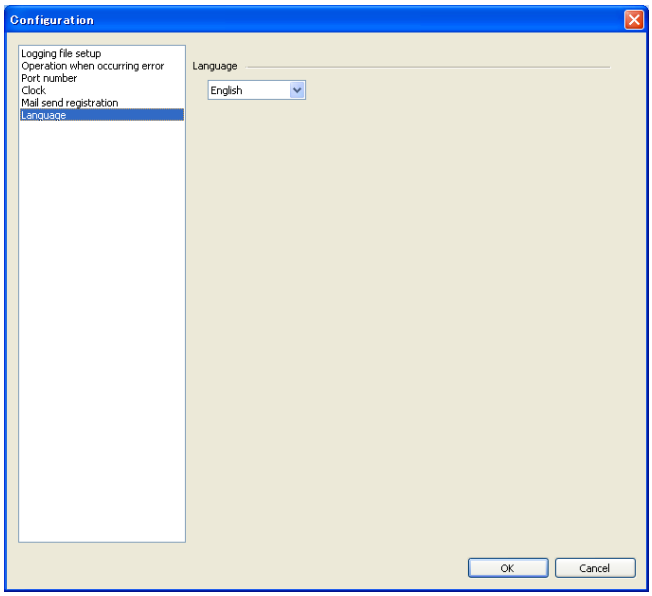
Item	Contents
Registered number	Max. 16 users
Name	Max. 16 letters
Mail address	Max. 48 letters

[How to delete]

In order to delete the registered users, check box of No. to delete and click “Delete”.

■Language

It changes to displayed language for Configurator DL.
After changing language, restart Configurator DL.



7.2.15 Easy-setup

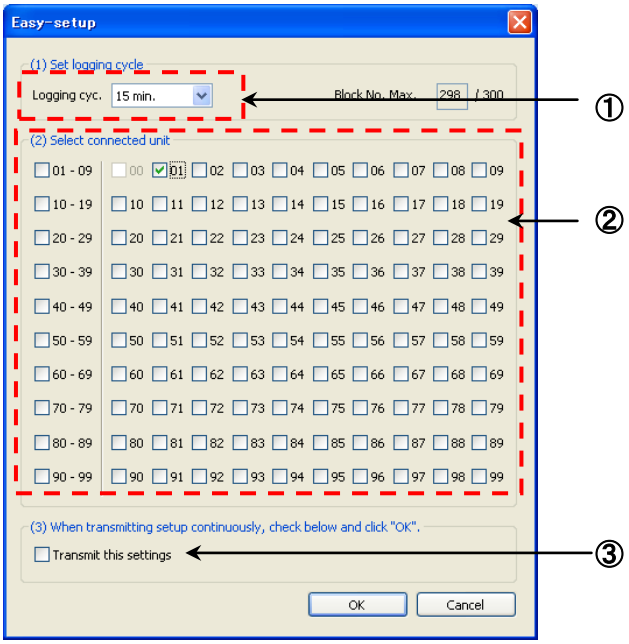
Data Logger Light can be setup only by selecting logging cycle, unit No. and connecting unit.
You can setup easy for electric power monitoring.

Following items are set with “Easy-setup”.

Item	Contents	
Logging cyc.	Select logging cycle of collecting data.	
	Select items	15 min, 30 min, 60 min
Unit No.	Select unit No. to connect.	
	Select range	1 to 99
Select connecting unit	Select connecting unit to Data Logger Light.	
	Select items	Eco-POWER METER, Multi-circuit energy checker, Multi-circuit energy monitor Multi-circuit energy monitor(3P4W unit)

Note

- It is impossible to setup additionally. If you setup with this, the current setups will be cleared.
- In this setting, the communication protocol is MEWTOCOL.



①Logging cyc.

Select data logging cycle from 15min., 30 min. and 60 min.

②Select connected unit

Select unit number to connect. Click and check boxes.

③Transmit this settings

Check box and click “OK”. Setup data is transmitted to Data Logger Light.

Note

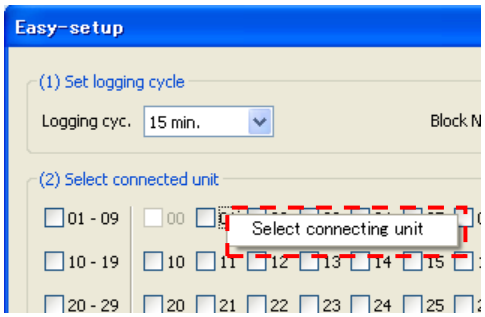
After completing settings and click “OK”, setup data on Configurator DL are cleared.

Reference

<7.2.8 Transmit to Data Logger Light and Read out from Data Logger Light >

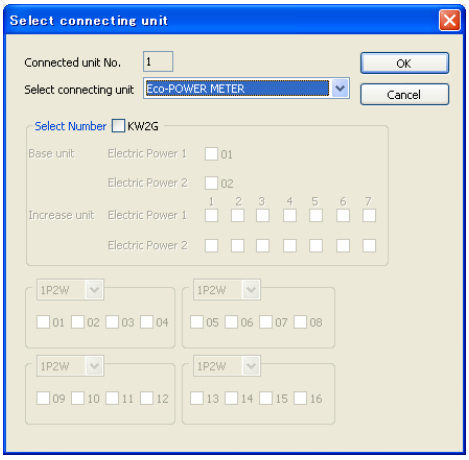
[Select connected unit]

Right click any box to select type of connected devices from Eco-POWER METER, Multi-circuit energy checker, Multi-circuit energy monitor.



■Eco-POWER METER

Select “Eco-POWER METER” when Eco-POWER METER is connected to Data Logger Light.

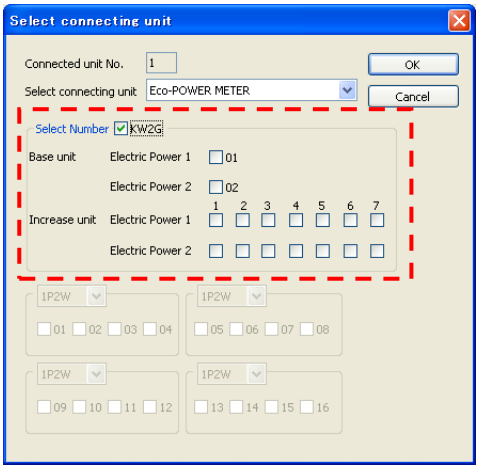


The conditions below are set automatically.

[Eco-POWER METER]

Item	Contents	
New file create timing	Everyday 0:0:05	
Logging file 1	Logging file name	syunji
	Saved file number	60
	Data type	Register
	Device	DT: 100 (Integrated electric power)
	Data style	DEC2W(No code)
	Logging contents	Inst.value
	Digit	0
	Conversion value	0.01
	Unit	kWh
Logging file 2	Logging file name	sabun
	Saved file number	60
	Data type	Register
	Device	DT: 100 (Integrated electric power)
	Data style	DEC2W(No code)
	Logging contents	Diff.value
	Digit	9
	Conversion value	0.01
	Unit	kWh
Configuration	Make the destination folder name of logging file [CF].	

[KW2G Eco-POWER METER]

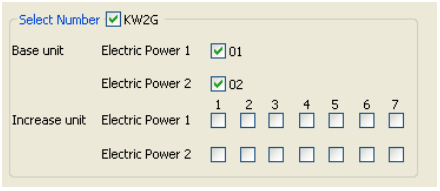


Item	Contents	
New file create timing	Everyday 0:0:05	
Logging file 1	Logging file name	syunji
	Saved file number	60
	Data type	Register
	Device	Integrated electric power (Register No. is changed according to the selected Base unit or the Increase unit.)
	Data style	DEC2W(No code)
	Logging contents	Inst.value
	Digit	0
	Conversion value	0.01
	Unit	kWh
Logging file 2	Logging file name	sabun
	Saved file number	60
	Data type	Register
	Device	Integrated electric power Integrated electric power (Register No. is changed according to the selected Base unit or the Increase unit.)
	Data style	DEC2W(No code)
	Logging contents	Diff.value
	Digit	9
	Conversion value	0.01
	Unit	kWh
Configuration	Make the destination folder name of logging file [CF].	

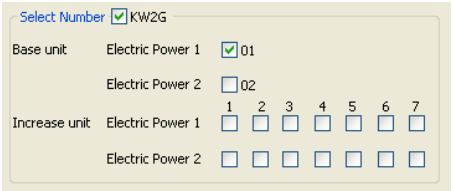
Note

・KW2G has one station number per one main unit.
The station number for the expansion unit is same as the connected main unit.

・Check ‘Electric Power 1’ ‘Electric Power 2’ in case of measuring 1P2W. (Ex.1)
Check ‘Electric Power 1’ in case of measuring 1P3W and 3P3W. (Ex.2)



[Ex.1: 1P2W]

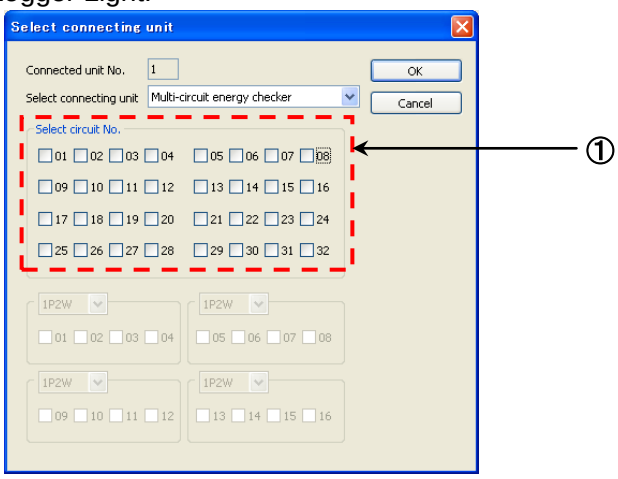


[Ex.2: 1P3W, 3P3W]

*Same for the expansion units.

■Multi-circuit energy checker

Select “Multi-circuit energy checker” when Multi-circuit energy checker is connected to Data Logger Light.



①Select circuit No.

Select circuit number.

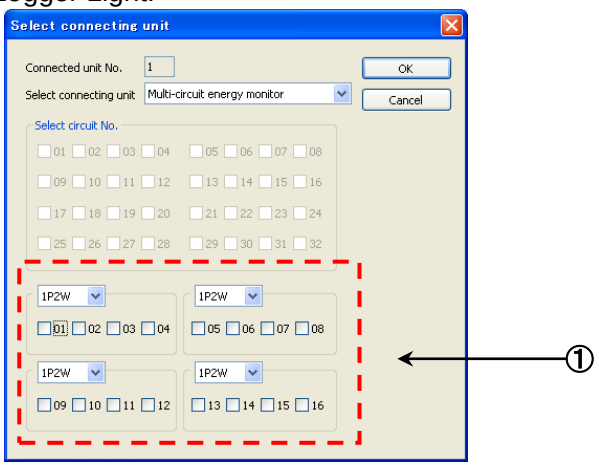
Item	Contents
Circuit number	1 to 32

The conditions below are set automatically.

Item	Contents	
New file create timing	Everyday 0:0:05	
Logging file 1	Logging file name	syunji
	Saved file number	60
	Data type	Register
	Device	Integrated electric power (Register No. is changed according to the selected circuit number.)
	Data style	DEC2W(No code)
	Logging contents	Inst.value
	Digit	0
	Conversion value	0.1
	Unit	kWh
Logging file 2	Logging file name	sabun
	Saved file number	60
	Data type	Register
	Device	Integrated electric power (Register No. is changed according to the selected circuit number.)
	Data style	DEC2W(No code)
	Logging contents	Diff.value
	Digit	6
	Conversion value	0.1
	Unit	kWh
Configuration	Make the destination folder name of logging file [CF].	

■Multi-circuit energy monitor

Select “Multi-circuit energy monitor” when Multi-circuit energy monitor is connected to Data Logger Light.



①Select circuit No.

Select circuit number and phase and wire system.

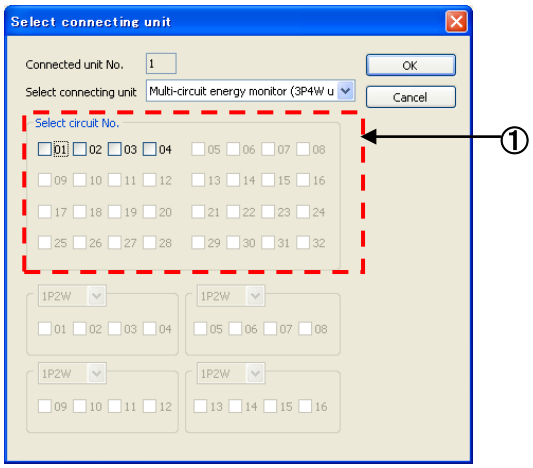
Item	Contents
Phase and wire system	1P2W, 1P3W, 3P3W
Circuit number	1 to 16

The conditions below are set automatically.

Item	Contents	
New file create timing	Everyday 0:0:05	
Logging file 1	Logging file name	syunji
	Saved file number	60
	Data type	Register
	Device	Integrated electric power (Register No. is changed according to the selected circuit number.)
	Data style	DEC2W(No code)
	Logging contents	Inst.value
	Digit	0
	Conversion value	0.01
	Unit	kWh
Logging file 2	Logging file name	sabun
	Saved file number	60
	Data type	Register
	Device	Integrated electric power (Register No. is changed according to the selected circuit number.)
	Data style	DEC2W(No code)
	Logging contents	Diff.value
	Digit	9
	Conversion value	0.01
	Unit	kWh
Configuration	Make the destination folder name of logging file [CF].	

■Multi-circuit energy monitor(3P4W unit)

Select “Multi-circuit energy monitor (3P4W unit)” when Multi-circuit energy monitor(3P4W unit) is connected to Data Logger Light.


Select connecting unit
Connected unit No.
1
OK
Select connecting unit
Multi-circuit energy monitor (3P4W u
Cancel
Select circuit No.
01 02 03 04 05 06 07 08
09 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32
1P2W
01 02 03 04 05 06 07 08
1P2W
09 10 11 12 13 14 15 16
①

①Select circuit No.

Select circuit number.

Item	Contents
Circuit number	1 to 4

The conditions below are set automatically.

Item	Contents	
New file create timing	Everyday 0:0:05	
Logging file 1	Logging file name	syunji
	Saved file number	60
	Data type	Register
	Device	Integrated electric power (Register No. is changed according to the selected circuit number.)
	Data style	DEC2W(No code)
	Logging contents	Inst.value
	Digit	0
	Conversion value	0.01
	Unit	kWh
Logging file 2	Logging file name	sabun
	Saved file number	60
	Data type	Register
	Device	Integrated electric power (Register No. is changed according to the selected circuit number.)
	Data style	DEC2W(No code)
	Logging contents	Diff.value
	Digit	9
	Conversion value	0.01
	Unit	kWh
Configuration	Make the destination folder name of logging file [CF].	

7.2.16 Wizard setup

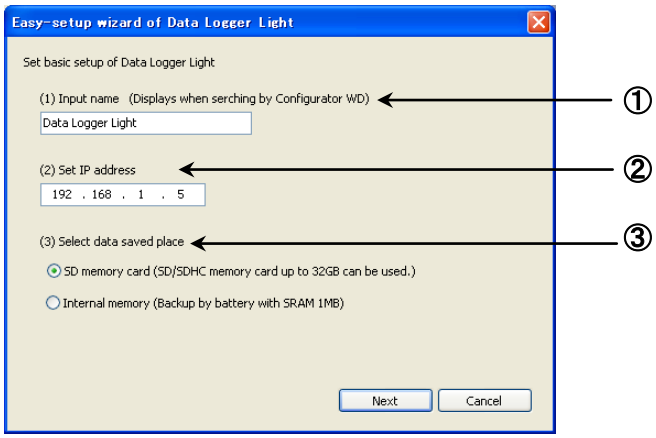
Data Logger Light can be setup dialogically.
Items below are set with “Wizard setup”.

Step No.	Item	Contents
Step 1	①Name	Name to Data Logger Light. It displays when communication setups or searching by “Configurator WD”.
	②Address	Set IP address of Data Logger Light.
	③Data saved place	Select saved place for logging file.
Step 2	①File name	Name to logging file.
	②Logging cycle	Select logging cycle to file.
Step 3	①Logging device name	Name to item in logging data.
	②COM port, Unit No.	Input communication port and target unit No.
	③Input logging device	Set register number to log and conditions.
	④Conversion value	Input conversion value if necessary.
	⑤Unit	Input unit.

Note

- It is impossible to setup additionally. If you setup with this, the current setups will be cleared.
- In this setting, the communication protocol is MEWTOCOL.

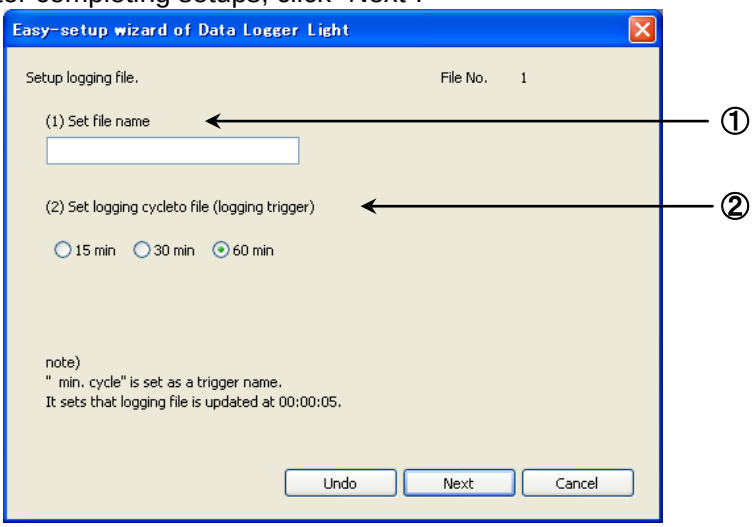
1) Setup items about Data Logger Light.
After completing setups, click “Next”.


Easy-setup wizard of Data Logger Light
Set basic setup of Data Logger Light
(1) Input name (Displays when serching by Configurator WD)
Data Logger Light
(2) Set IP address
192 . 168 . 1 . 5
(3) Select data saved place
SD memory card (SD/SDHC memory card up to 32GB can be used.)
Internal memory (Backup by battery with SRAM 1MB)
Next
Cancel
①
②
③

	Item	Contents
①	Input name	Input name of Data Logger Light. It is displayed when searching by “Configurator WD”. Input range: Max. 32 letters *1
②	Set IP address	Set IP address of Data Logger Light.
③	Select data saved place	Select saved place of logging file. ・SD memory card : It saves in SD memory card ・Internal memory : It saves in the internal memory of Data Logger Light

Note
When it is saved in the internal memory, be sure to use the backup battery.

2) Setup items about logging file.
After completing setups, click “Next”.



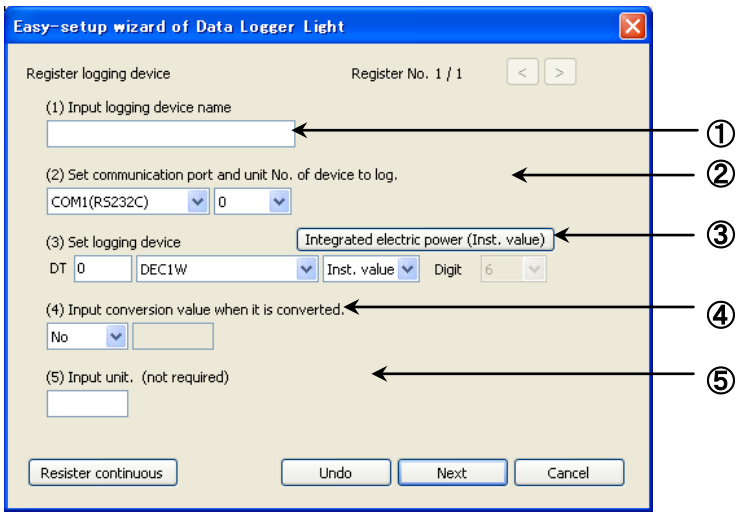
Item	Contents
①Set file name	Input name of logging file (csv). Input range: Max. 32 letters
②Set logging cycle to file	Select cycle to log data from 15 min., 30 min, 60 min.

*1 It can’t use the below letters.

letter	name	letter	Name
¥	Yen	*	Asterisk
/	Slash	?	Question mark
＼	Backslash	“	Double quotation
:	Colon	<	Inequality sign
;	Semi-colon	>	Inequality sign
.	dot	|	Pipe
	Half-width space (only the beginning)		

Note
Logging file will be updated at 00:00:05 everyday.

3) Setup items about logging device.
In order to register several devices, click “Register continuous”.
To complete registration, click “Next”.



Item	Contents	
①Input logging device name	Input name of logging device. Input range: Max. 16 letters *1	
②Set communication port and unit No. of device to log.	Communication port	COM1(RS232C) / COM2(RS485)
	Unit No.	0 to 99 *2
③Set logging device	Input and select data information of log data.	
	DT	Input data register number to log.
	Data style	DEC1W, DEC1W(No code), DEC2W(No code)
	Logging contents	Inst.value, Diff.value
	Digit	6, 9 (Selectable only when “Diff.value” is selected.)
④Input conversion value when it is converted.	Convert	No, Do
	Conversion value	-99999.999 to 99999.999 (Number of significant figures: 6 digits)
⑤Input unit.	Input unit: Max. 4 letters	

Note
*1 It can’t use the below letters.

letter	name
,	comma
“	Double quotation

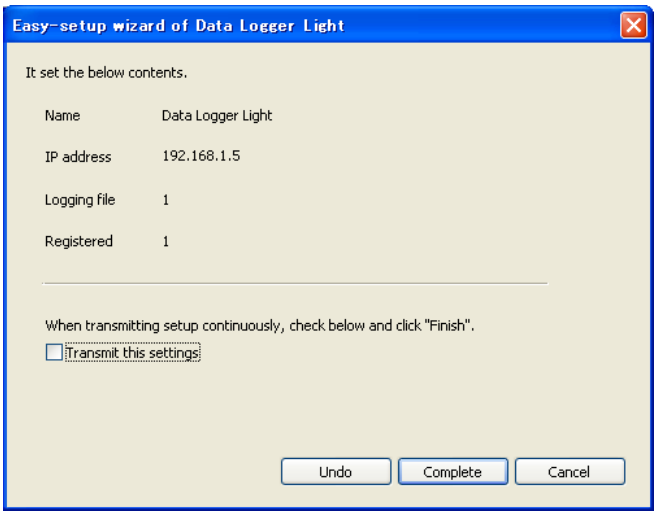
Note
*2 Unit No. is selected from 1 to 99 for COM2(RS485).

Point

Click “Integrated electric power (Inst.value)” and the items below are input automatically to ③, ④ and ⑤.

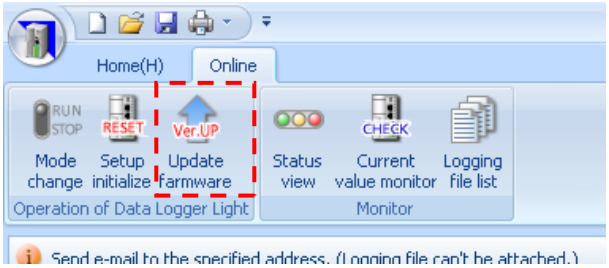
Item	Contents	
③Set logging device	DT	100
	Data style	DEC2W(No code)
	Logging contents	Inst.value
④Input conversion value when it is converted.	Convert	Do
	Conversion value	0.01
⑤Input unit.	kWh	

4) After completing all input, it displays the setting contents.
In order to transmit data to Data Logger Light, check box of “Transmit this settings” and click “Complete”. If not to transmit data, click “Complete” without check box.



7.2.17 Firmware update

It updates firmware and upgrades software in Data Logger Light.

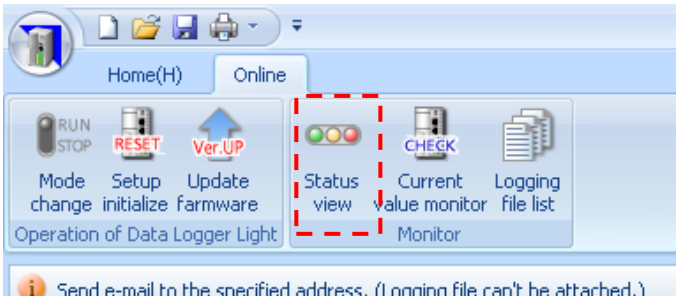


Point

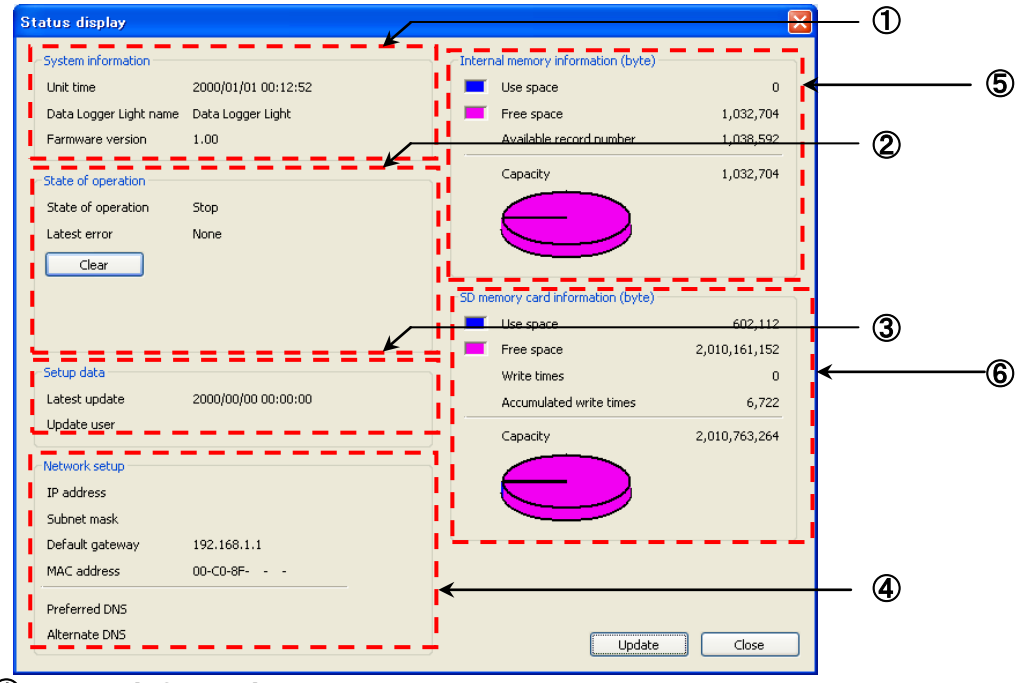
- Extension of the firmware is “ .bin”.
- You can download the latest file of the firmware from our website. (http://www3.panasonic.biz/ac/e/index.jsp)
- Even if the firmware is updated, It keeps setting data with the setting conditions. (Refer to 7.2.12 about logging data in SRAM.)
- Set to ‘STOP’ mode during upgrading the firmware.
- During updating firmware, do not turn off power. It might damage data or Data Logger Light.
- It will restart when you cancel the update firmware, after updating firmware, after error of updating firmware. Therefore, it takes time to recognize USB/LAN connectors.

7.2.18 Status view

It displays the information of Data Logger Light.



Click “OK” after input required information, it displays “Status display”.



①System information

You can confirm the time, name and firmware version of Data Logger Light.

②State of operation

You can confirm the current operation status.
Click “Clear” and clear errors displayed at the moment and ERROR LED turns off.

Note
“Clear” is used only for clear error display and ERROR LED.
It cannot used to solve an error source.

Reference
<12.3 Error Code>

③Setup data

You can confirm the updated time to set to Data Logger Light.

④Network setup

You can confirm the setup conditions for network.

⑤Internal memory information (byte)

You can confirm the capacity of internal memory.

⑥SD memory card information (byte)

You can confirm the vacant capacity and write times of inserted SD memory card.

Point

・Write times to SD memory card is displayed.
It is a standard of write times to SD memory card.

Write times: From inserting SD memory card to removing SD memory card
Accumulated write times: Until to initialize setup data or initialize main unit or update firmware

[Clear timing of write times and accumulated write times]

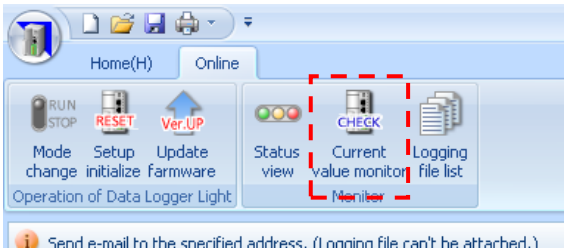
Operation	Write times	Accumulated write times
Insert or remove SD memory card	Clear	Not cleared
Rewrite setup data	Clear	Not cleared
Setup initialize	Clear	Clear
Update firmware	Clear	Clear

Note

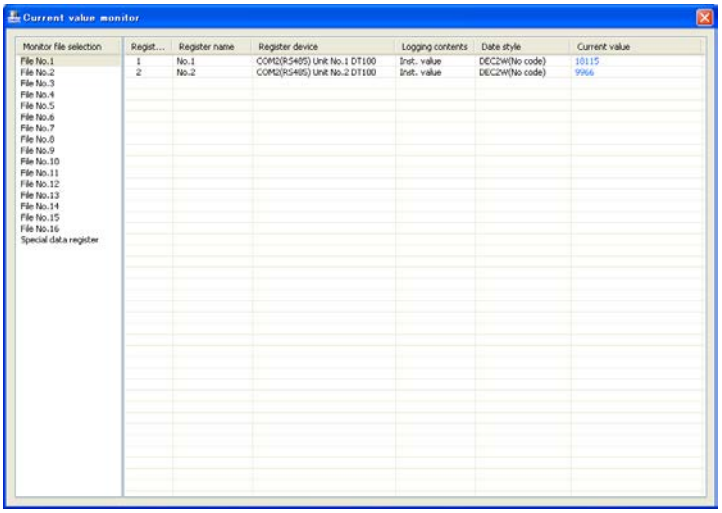
Write times is stored in Data Logger Light, not in individual SD memory card.
Therefore, when SD memory card is replaced in using, an accumulated write times is not match. Even if setup data is reversed the write times is not reversed.

7.2.19 Current value monitor

It displays the values of logging device that is registered.



Click “OK” after input required information, it displays “Current value monitor”.

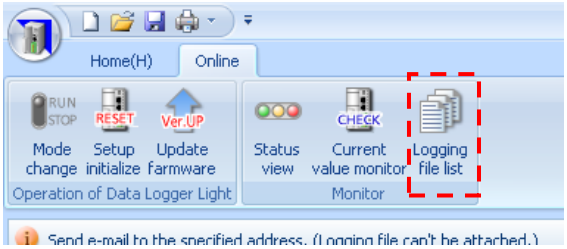


Point

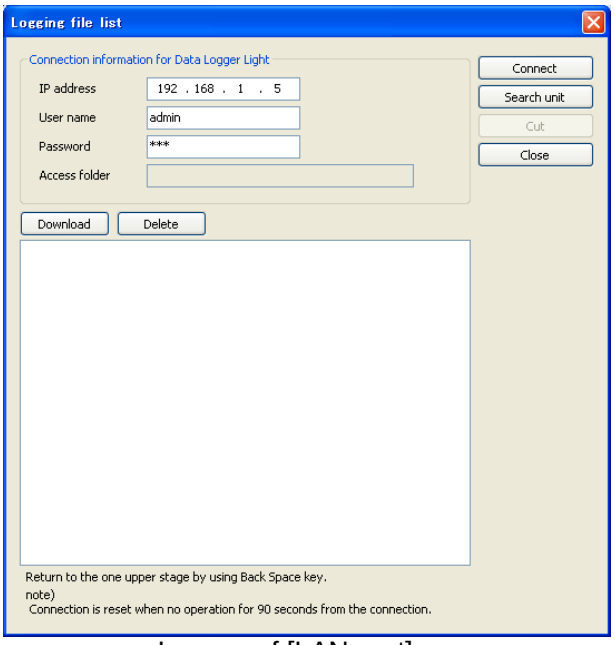
- It is necessary to read setup conditions of Data Logger Light in Configurator DL before viewing the current value.
- For device in which communication error occurs, "-" is displayed in Current value.
- Display of current value monitor is updated by 1 sec cycle.
- When “Special data register” is selected, current value of the special data register can be monitored. (Refer to 10.1.3)

7.2.20 Logging file list

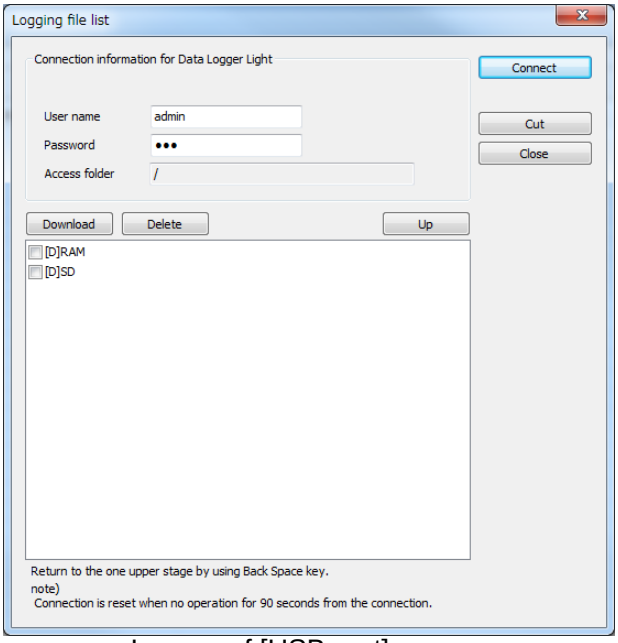
It displays the logging file list in SD memory card or internal memory and downloads it.



Click “Connect” after input required information for connection, it displays logging file list in SD memory card or internal memory. Double-click the folder name to move the below folder.
After checking box of file name, click “Download” to download and click “Delete” to delete.



In case of [LAN port]



In case of [USB port]

Item	Contents
IP address	Input IP address of Data Logger Light.
User name	Input user name.
Password	Input password.

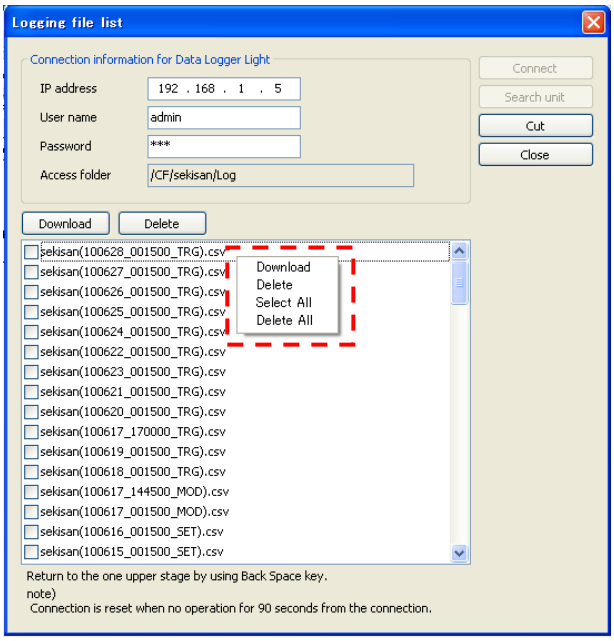
Point

You can move to above folder by using backspace key.

Note

- Max. connection number is 2. It is impossible to access if connection number is 3 or more. (Error message is depended on the using software.)
- It cut connection if there are no operation for 90 seconds during connection. When you select the displayed folder name or file name, it will connect again. However, there is no selecting folder or file, it will move to root directory.

Right-click on the window and the small window is displayed.
You can select ”Download”, ”Delete”, ”Select all” and “Delete all”.



Point

The logging file list is displayed or downloaded with FTP commands.
Also, it is processed across firewall as PASV mode is used.

Chapter 8 About Creating File

8.1 Creating file

Data Logger Light creates files of following type.

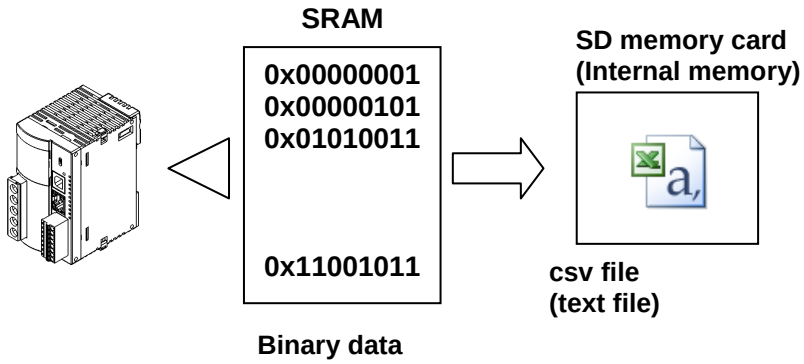
1. Logging file : Create file by collecting data.
2. System history file : It records system history.
3. Trigger history file : It records trigger history.

Note

There is the case that a 'dllite.sys' file for maintenance is created in the root folder.

8.1.1 Logging file

Data collected by Data Logger Light is stored in internal SRAM (1MB for saving data) contemporarily. When stored data in SRAM is reaches some conditions (setting record number, setting trigger etc.), it creates file in SD memory card (or internal memory) as csv.



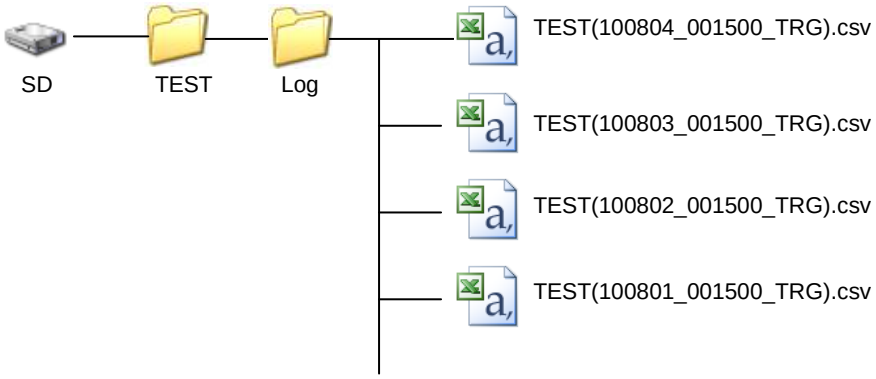
Note

- SRAM uses 32-bit area per 1 datum for both 16-bit and 32-bit data type. However, when 'Collect DEC4W data' is available, it uses 64-bit area regardless log data type.
- When power off, SRAM protects collecting data until then that is not created file so that we recommend to use a battery for backup.

■Folder composition of logging files

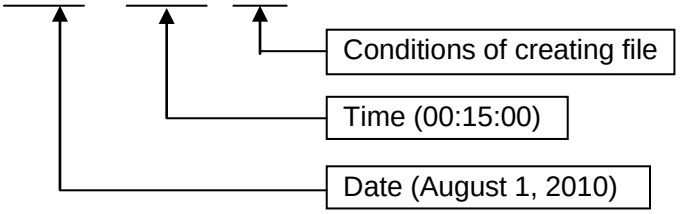
Logging files are saved with the composition below in SD memory card (or internal memory).

Ex.) It creates logging files that name is set to "TEST".



[Details of file name]

TEST(100801__001500__TRG).csv



[Conditions of creating file]

Conditions of creating file	Recorded letter
When logging data reaches the appointed record number during running.	SET
When it occurs “update trigger” during running. (Even if logging data doesn’t reach the appointed record number, it creates file with the logging data until then.)	TRG
When it shifts RUN mode to STOP mode. (Even if logging data doesn’t reach the appointed record number, it creates file with the logging data until then.)	MOD
When CURRET file is remained at power on, it is renamed.	POW
When it can’t create file correctly because it is run out of available capacity in SD memory card or internal memory.	ERR

Reference

<7.2.14 Configuration >

Note

・Date and time of the first recorded file is recorded.

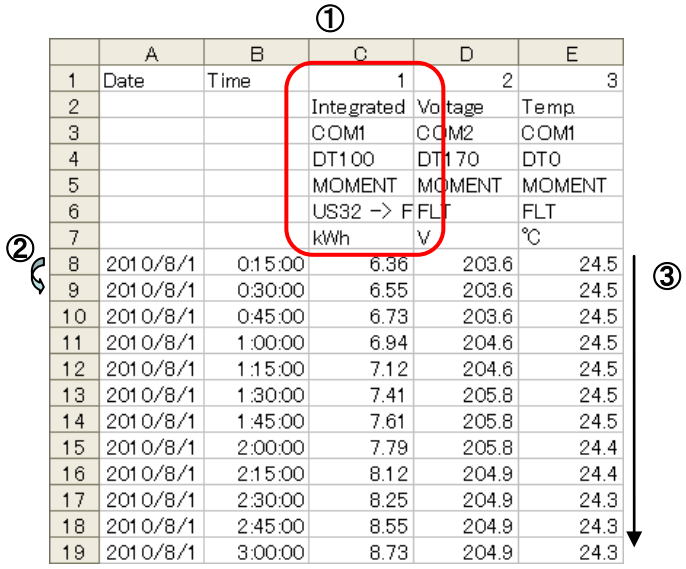
・Data without creating file may be renamed in SRAM at breakout during running.
If some data are remained in SRAM at power on, it creates file with the remained data first and it executes another working.

・Name of file that is not met to creating file is TEST(- - - -CURRENT- - - -).csv.

Point

In order to use our “KW Watcher” check box of “Configuration -> Logging file setup -> Make the destination folder name of logging file [CF].”

■Image of logging file



	A	B	C	D	E
1	Date	Time	1	2	3
2			Integrated	Voltage	Temp.
3			COM1	COM2	COM1
4			DT100	DT170	DT0
5			MOMENT	MOMENT	MOMENT
6			US32 -> F	FLT	FLT
7			kWh	V	℃
8	2010/8/1	0:15:00	6.36	203.6	24.5
9	2010/8/1	0:30:00	6.55	203.6	24.5
10	2010/8/1	0:45:00	6.73	203.6	24.5
11	2010/8/1	1:00:00	6.94	204.6	24.5
12	2010/8/1	1:15:00	7.12	204.6	24.5
13	2010/8/1	1:30:00	7.41	205.8	24.5
14	2010/8/1	1:45:00	7.61	205.8	24.5
15	2010/8/1	2:00:00	7.79	205.8	24.4
16	2010/8/1	2:15:00	8.12	204.9	24.4
17	2010/8/1	2:30:00	8.25	204.9	24.3
18	2010/8/1	2:45:00	8.55	204.9	24.3
19	2010/8/1	3:00:00	8.73	204.9	24.3

Item	Contents
①header	It is header of logging device. It can change at “Configuration”.
②logging trigger	It is timing of collecting data.
③record	Data recorded in file is called “record”.

[Addition]Description of Logging contents and Data style

Letter described in file	Logging contents
STATUS	Inst.value (Relay)
TOTAL ON TIME	Accumulated ON time
TOTAL SW TIMES	Total switching times
MOMENT	Inst.value
AVERAGE	Ave.value
MINIMUM	Min.value
MAXIMUM	Max.value
DIFFERENCE	Diff.value

Letter described in file	Data style
S16	DEC1W
US16	DEC1W(No code)
HEX4	HEX4 digits
S32	DEC2W
US32	DEC2W(No code)
HEX8	HEX8 digits
FLT	Real number
S64	DEC4W
US64	DEC4W(No code)

Note

・In case of converting the logging device, data style is displayed as “US16→FLT” (style before conversion→style after conversion)

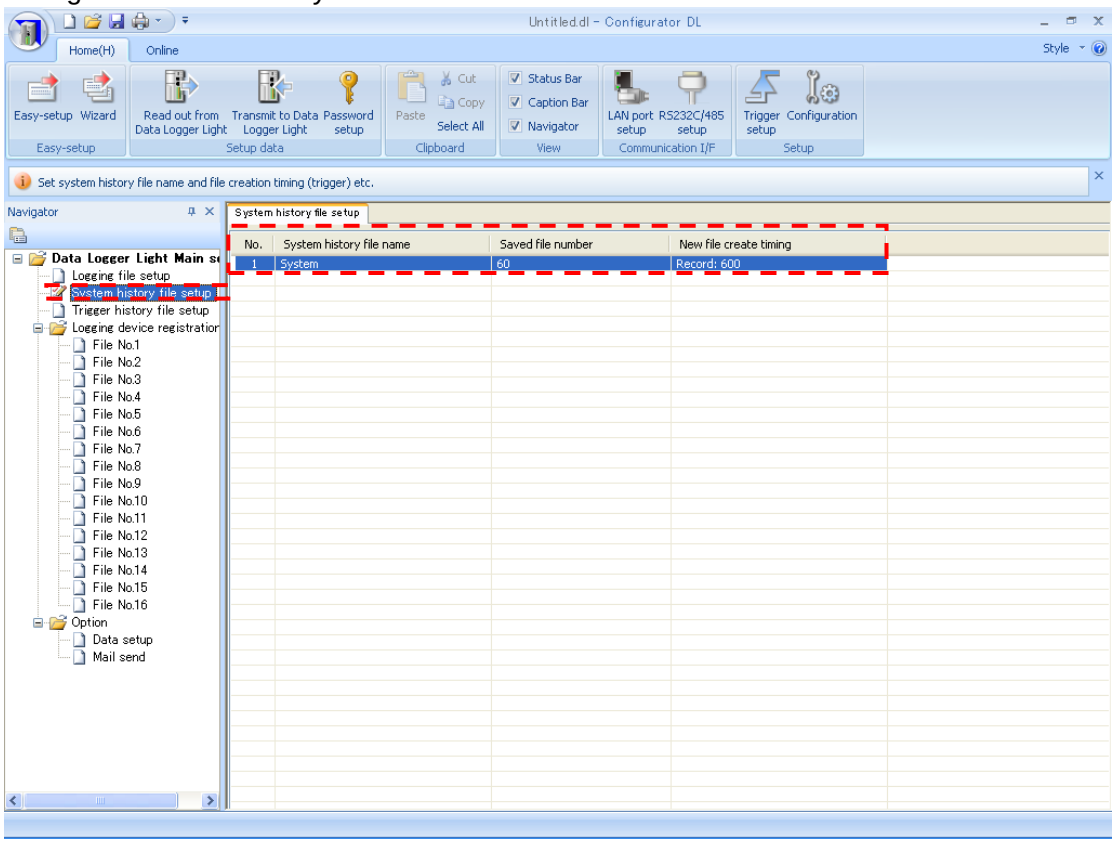
・When it could not collect data (no appointed unit, communication error etc.), “—” will be displayed.

8.1.2 System history file

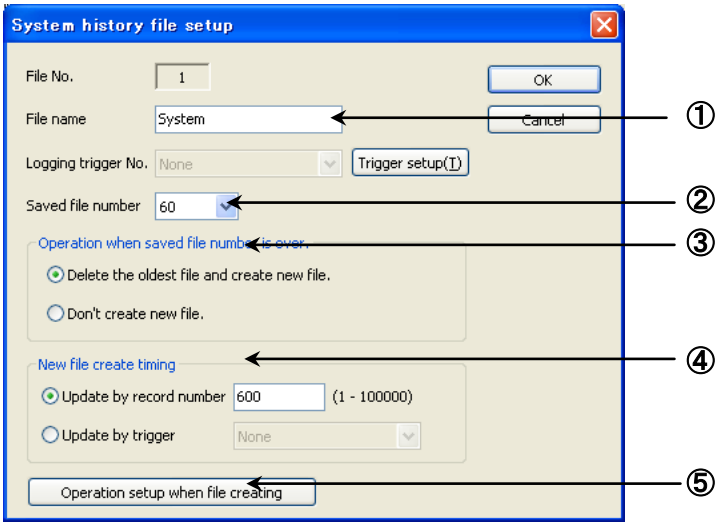
Date and time of power on or error occurrence are recorded in file.
This file is called “System history file”.
“System history file” is recorded in destination to logging file with the name of “System.csv”.

■Setup for creation of system history file

1) Click “System history file setup” in Navigator menu, and system history file names are displayed on the right. Double-click any file names.



2) Setup each items to create system history file.
After completing all input, click “OK”.



Item		Contents
①	File name	Input name of system history file(csv). Input range: Max. 32 letters *1
②	Saved file number	Set generation number of logging file. Input range: 1 to 100
③	Operation when saved file number is over.	Set operation when saved file number is over. ・Delete the oldest file and create new file. ・Don't create new file. If the saved file number is over, it doesn’t create new file.
④	New file create timing	Set timing for creating logging file. ・Update by record number When it reaches the appointed record number, it creates new logging file. Input range: 1 to 100000 ・Update by trigger Select one of the setting trigger numbers.
⑤	Operation setup when file creating	File is created when it meets the condition set at new file create timing. It can send mail at that time.

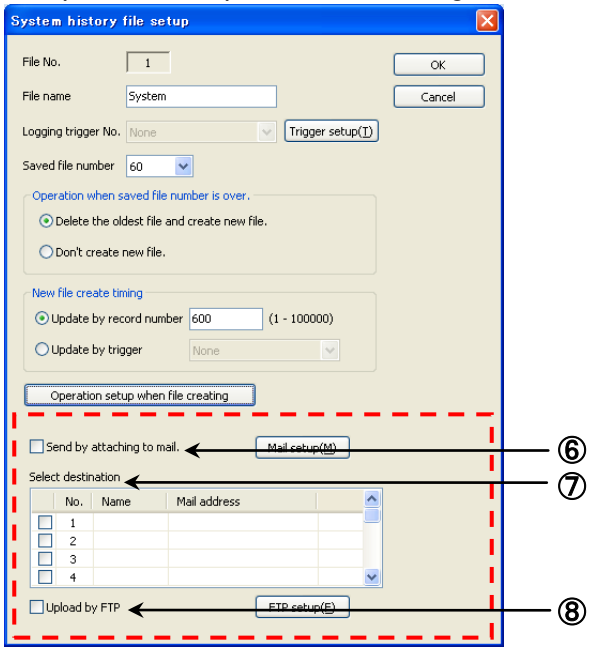
Note

*1 It can’t use the below letters.

letter	name	letter	Name
¥	Yen	*	Asterisk
/	Slash	?	Question mark
\	Backslash	“	Double quotation
:	Colon	<	Inequality sign
;	Semi-colon	>	Inequality sign
.	dot	|	pipe
	Half-width space (only the beginning)		

■Operation when creating of system history file

At this point, it sets the operation when new file is created.
Created file is sent by attaching mail when the file is created at new file create timing.
Click “Operation setup when file creating”, and the menu below is displayed.



Item	Contents
⑥ Send by attaching to mail.	Check box to send a file attaching to mail when the file is created.
⑦ Select destination	Check boxes of name to be sent mail. You can send mail to several destinations by checking boxes. (Max. 16 users)
⑧ Upload by FTP	Check box and upload by FTP server.

Reference

Mail setup: <7.2.10 LAN port setup > < 7.2.14 Configuration >
FTP setup: <7.2.10 LAN port setup >

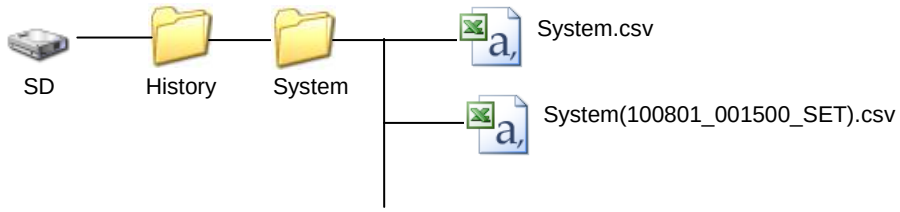
Note

・When you set the working at creating files, set 5 minutes or more for upload cycle by sending mail and FTP.
・Attached file might not be sent depending on mail server if a space is included in the file name. When there is no attached file, check with your network administrator.
・Set different timings to send mail, upload by FTP, and create new file, if not, it may not attach file to mail.

■Folder composition of system history files

System history files are saved with the composition below in SD memory card (or internal memory).

Ex.) It creates system history files in SD memory card.



Note

"System.csv" corresponds to "CURRENT file" for logging file.
Therefore it is contemporary file until to meet the conditions.
It creates new file when it meets the conditions.

Point

In order to use our "KW Watcher" check box of "Configuration -> Logging file setup -> Make the destination folder name of logging file [CF]."

■Format of system history file

System history file is recorded with the format below.

Date	Time	Record	Data1	Data2

Details of each item

Date : Occurrence date

Time : Occurrence time

Record	Data1	Data2	Remarks
Power ON	(Reset factor) ・ー: Normal ・Power failure: instantaneous power failure ・WDT time up: Runaway	ー	Record power on
Power OFF	ー	ー	Record power off
Firmware was updated	(User name)	ー	Update firmware
Setting data was updated	(User name)	ー	Record setup change
Hardware error	・Main unit	(error code)	Hardware error
File error	(Error file name)	(error code)	File error
Network error	Port number/USB	(error code)	Higher communication error (SMTP etc.)
Communication error	COM1/COM2	(error code)	Lower communication error (MEWTOCOL etc.)
Changed to Run mode	ー	ー	Change to RUN mode
Changed to Stop mode	ー	ー	Change to STOP mode
Output	(Data name or device name if data name is not registered.)	(data)	Control output
SD card cover was removed	ー	ー	Open SD memory card cover
SD card cover was installed	ー	ー	Close SD memory card cover
Time was adjusted	Port number	・OK ・NG ・ー	Adjust time by SNTP
Time was adjusted	Register number	data	Adjust time by tool
Manual reset	ー	ー	Reset by manually
Remote reset	ー	ー	Reset by tool
Remote	Register number	data	Write the special register

Reference

<12.3 Error Code>

Point

Ex) Communication error when it reads DT100 for station number 1 at April 1, 2012 12:00.

Date	Time	Record	Data1	Data2
2011/4/1	12:00:00	Communication error	Read Command / COM2 / [Unit No.1] / DT100	E0074[Time out error]

Ex.) Communication error is recovered when it reads DT100 for station number 1 at April 1 12:05.

Date	Time	Record	Data1	Data2
2012/4/1	12:05:00	Communication error	Read Command / COM2 / [Unit No.1] / DT100	0

*When error is recovered, zero will be recorded for Data2.

8.1.3 Trigger history file

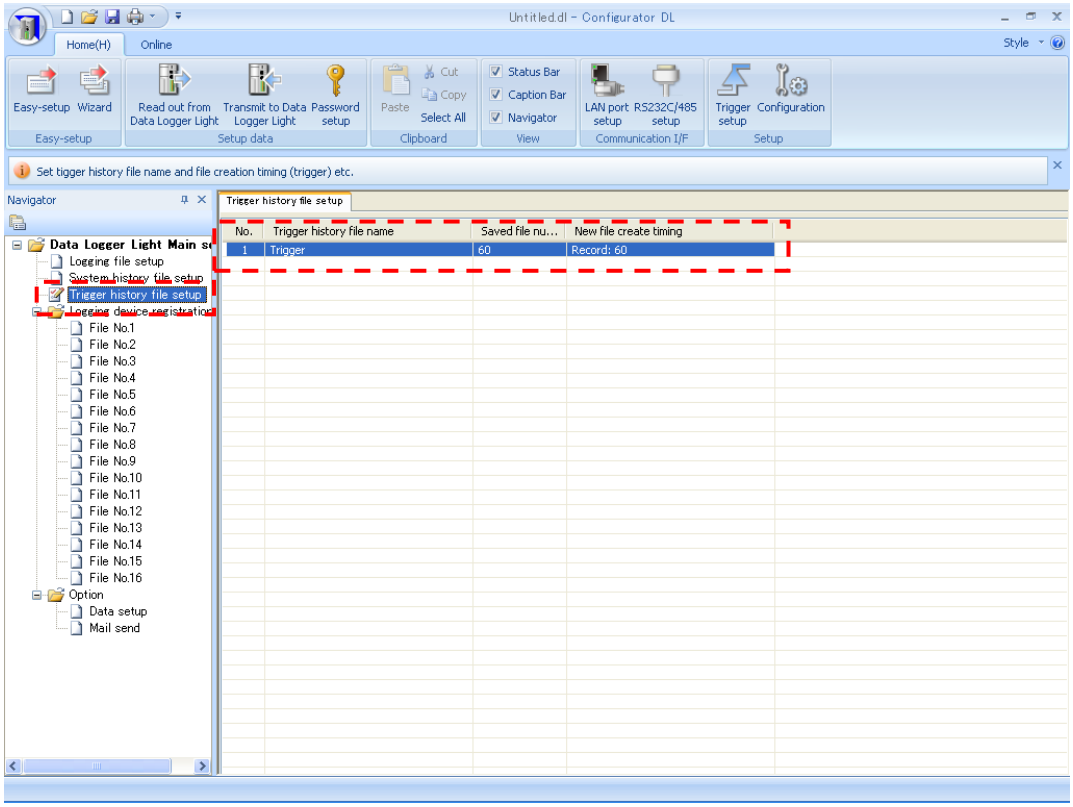
History of trigger occurrence is recorded in file.
When a setting trigger occurs, it records history in file.
This file is called “Trigger history file”.
“Trigger history file” is recorded in destination to logging file with the name of “Trigger.csv”.

Only when one of the below is selected for trigger type, trigger history file is created.

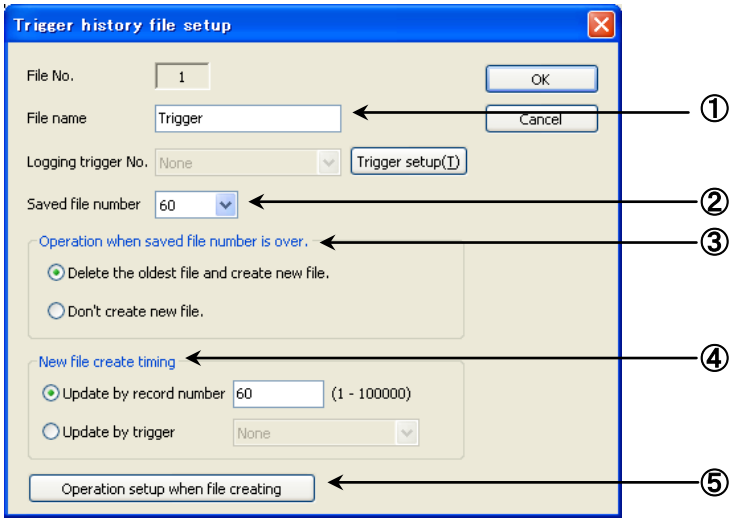
- Relay
- Register
- Combination

■Setup for creation of trigger history file

1) Click “Trigger history file setup” in Navigator menu, and trigger history file names are displayed on the right. Double-click any file names.



2) Setup each items to create trigger history file.
After completing all input, click “OK”.



	Item	Contents
①	File name	Input name of system trigger history file(csv). Input range: Max. 32 letters *1
②	Saved file number	Set generation number of logging file. Input range: 1 to 100
③	Operation when saved file number is over.	Set the operation when saved file number is over. ・Delete the oldest file and create new file. ・Don't create new file. If the saved file number is over, it doesn’t create new file.
④	New file create timing	Set timing for creating a logging file. ・Update by record number When it reaches the appointed record number, it creates new logging file. Input range: 1 to 100000 ・Update by trigger Select one of the setting trigger numbers.
⑤	Operation setup when file creating	File is created when it meets the condition set at new file create timing. It can send mail at that time.

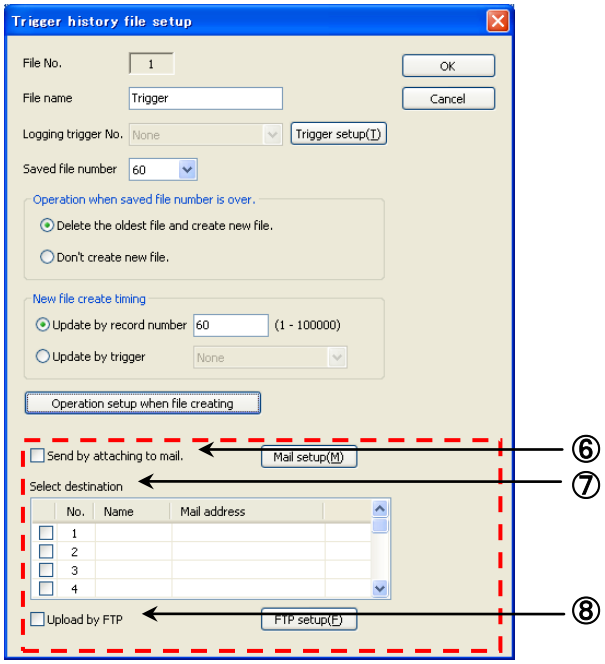
Note

*1 It can’t use the below letters.

letter	name	letter	Name
¥	Yen	*	Asterisk
/	Slash	/	Question mark
\	Backslash	“	Double quotation
:	Colon	<	Inequality sign
;	Semi-colon	>	Inequality sign
.	dot	|	pipe
	Half-width space (only the beginning)		

■Operation when creating of trigger history file

At this point, it sets the operation when new file is created.
Created file is sent by attaching mail when the file is created at new file create timing.
Click “Operation setup when file creating”, and the menu below is displayed.



Item		Contents
⑥	Send by attaching to mail.	Check box to send a file attaching to mail when the file is created.
⑦	Select destination	Check boxes of name to be sent mail. You can send mail to several destinations by checking boxes. (Max. 16 users)
⑧	Upload by FTP	Check box and upload by FTP server.

Reference

Mail setup :<7.2.10 LAN port setup > < 7.2.14 Configuration >
FTP setup :<7.2.10 LAN port setup >

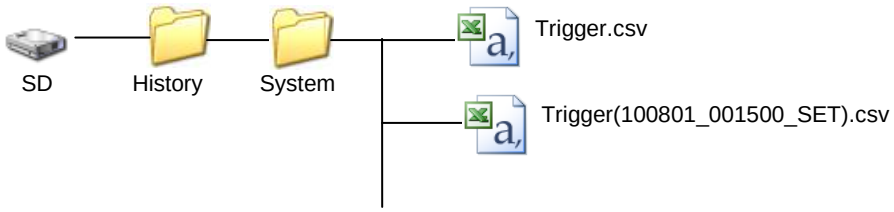
Note

・When you set the working at creating files, set 5 minutes or more for upload cycle by sending mail and FTP.
・Attached file might not be sent depending on mail server if a space is included in the file name. When there is no attached file, check with your network administrator.
・Set different timings to send mail, upload by FTP, and create new file, if not, it may not attach file to mail.

■Folder composition of trigger history files

Trigger history files are saved with the composition below in SD memory card (or internal memory).

Ex.) It creates trigger history files in SD memory card.



Note

"Trigger.csv" corresponds to "CURRENT file" for logging file.
Therefore it is contemporary file until to meet the conditions.
It creates new file when it meets the conditions.

Point

In order to use our "KW Watcher" check box of "Configuration -> Logging file setup -> Make the destination folder name of logging file [CF]."

■Format of trigger history file

Trigger history file is recorded with the format below.

Date	Time	No.	Name	Phenomenon

Details of each item

Display Item	Contents
Date	Occurrence date
Time	Occurrence time
No.	(Occurrence trigger number)
Name	(Occurrence trigger name)
Phenomenon	(Occurrence phenomenon) ・Occurrence ・Restoration

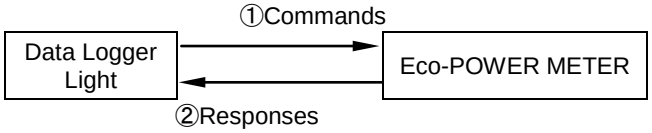
Chapter 9 Communication

9.1 MEWTOCOL Communication

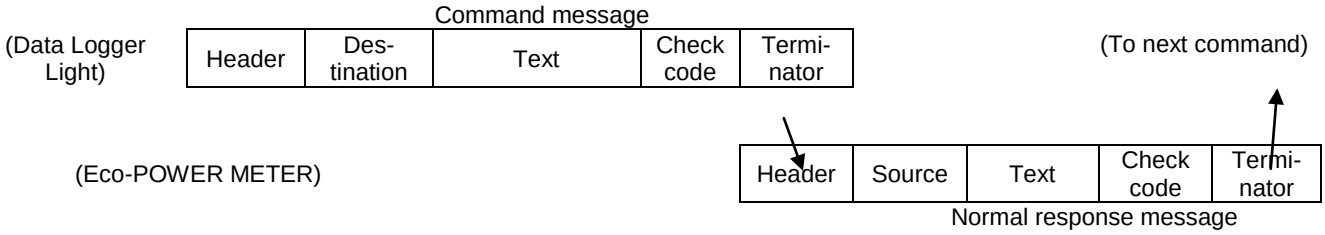
9.1.1 Overview of MEWTOCOL-COM

◆Command and response functions

The Data Logger Light sends commands (instructions) to Eco-POWER METER, and receives responses in return. This enables the Data Logger Light and Eco-POWER METER to converse with each other, so that various kinds of information can be obtained and provided.



◆Command and response formats



◇Control codes

Name	Character	ASCII code	Explanation
Header	%	25H	Indicates the beginning of a message.
Command	#	23H	Indicates that the data comprises a command message.
Normal response	$	24H	Indicates that the data comprises a normal response message.
Error response	!	21H	Indicates that the data comprises a response message when an error occurs.
Terminator	CR	0DH	Indicates the end of a message.

◇Destination and source AD (H), (L)

Two-digit decimal 01 to 99 (ASCII codes)

Command messages contain a station number for Eco-POWER METER that receives the message.

When FF (ASCII code table) is used, however, the transmission is a global transmission (sent to all stations at once).

Note) When a global transmission is sent, no response to the command message is returned.

◇Block check code Bcc (H), (L)

Two- digit hexadecimal 00 to FF (ASCII codes)

These are codes (horizontal parity) that are used to detect errors in the transmitted data.

If "**" is entered instead of "Bcc", however, messages can be transmitted without the Bcc. In this case, the Bcc is included with the response

◇Error code Err (H), (L)

Two- digit hexadecimal 00 to FF (ASCII codes)

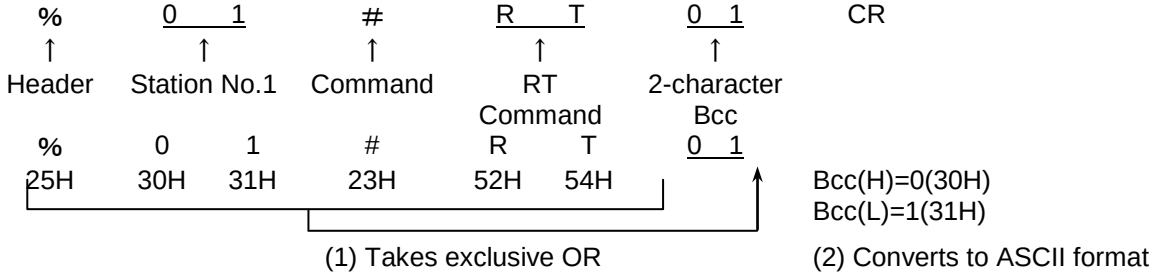
These indicate the content if an error occurs.

◆Bcc (Block Check Code)

-The Bcc is a code that carries out an error check using horizontal parity, to improve the reliability of the data being sent.

-The Bcc uses an exclusive OR from the header (%) to the final character of the text, and converts the 8- bit data into a 2-character ASCII code.

Example)



Reference

Port number<7.2.14 Configuration>

9.2 MODBUS(RTU) Communication

MODBUS(RTU) is serial communication protocol designed for programmable logic controller (PLC) by Modicon in 1979.

9.2.1 Overview of MODBUS(RTU)

●Sends 8-bit binary data in command as is.

Data structure	Start bit	: 1 bit
	Data length	: 8 bits * 7-bit data length is not available.
	Parity bit	: Selectable from None, Odd, Even.
	Stop bit	: 1 bit (Fixed)
	Error detection	: CRC-16 (cyclic redundancy check) method
	Data communication interval	: 3.5 character transmission time or more

●Message construction

Message in RTU mode is constructed to be started from silent interval of at least 3.5 characters and finished after silent interval of at least 3.5 characters.

Silent interval 3.5 characters	Slave address	Function code	Data	Error check CRC-16	Idle 3.5 characters
	8 bits	8 bits	** bits	16 bits	

Data reception will be considered complete when no more data is received for the time of 4 characters, and command processing will be performed.

* Baud rate and Reception done judgment time

Baud rate (bps)	Reception done judgment time (ms)
38400	Approx. 2.00
19200	Approx. 2.00
9600	Approx. 4.00
4800	Approx. 8.00
2400	Approx.16.00

●Slave address

Slave addresses are device numbers for each slave unit. The setting range is 1 to 247 (01H to F7H).

Master unit specifies slave units using each slave address of request messages.

●Function code: Function code is code to instruct the type of operation for slave unit.

Function code	Name	Contents
01(01H)	Read Coil Status	Reads the status of coil
02(02H)	Read Input Status	Reads the input relay status.
03(03H)	Read Holding Registers	Reads holding registers.
04(04H)	Read Input Registers	Reads input registers.
05(05H)	Force Single Coil	Writes the status of single coil.
06(06H)	Preset Single Registers	Writes to holding register.
16(10H)	Preset Multiple Registers	Writes to multiple holding registers

Master unit sends an instruction (function code) to slave unit, and the slave unit responds according to the instruction.
In case of acknowledgment, the original function code is set and returned.
In case of negative acknowledgment, 1 is set in the most significant bit of the original function code and returned.
In case of negative acknowledgment, error codes as below are set in response message data to inform master unit which type of error occurred.

Error code	Meaning
01	Function code error (Non-existent function code)
02	Number error of coil, input relays or registers (out of range)
03	Quantity error of coil, input relays or registers (out of range)

●Error check: 16-bit data for detecting communication error (Refer to the next section.)

●Response in normal status:
The same message as a command is returned for single write command.

Reference
<7.2.14 Configuration >

9.3 FTP (File Transfer Protocol) communication

It is communication protocol for file transmission on network.

9.3.1 Outline of FTP(File Transfer Protocol)

Data Logger Light can transmit file with using the below commands.

●FTP command list

Command	Contents
USER	Log in with appointed user name.
PASS	Designate user password.
CWD	Set an appointed directory as a current directory
QUIT	Log out
PORT	Designate IP address and port number for using data connection
PASV	Shift to passive mode
TYPE	Indicate the file construction of transmit file
RETR	Obtain designated file contents from server
STOR	Send to server with designated file name
RNFR	Change file name of designated file. Designate original file name.
RNTO	Execute after RNFR. Designate changed file name.
ABOR	Stop all data transmission under execution.
DELE	Delete designated file.
RMD	Delete designated directory.
MKD	Create designated directory.
PWD	Indicate current working directory.
LIST	Indicate file list in the current working directory.
SYST	Indicate system name.
HELP	Indicate command list.
NOOP	No working. Quit normally.

Reference

<7.2.14 Configuration >

Point

DLL creates file at receiving the below FTP commands.

・LIST

・CWD /make_current_file

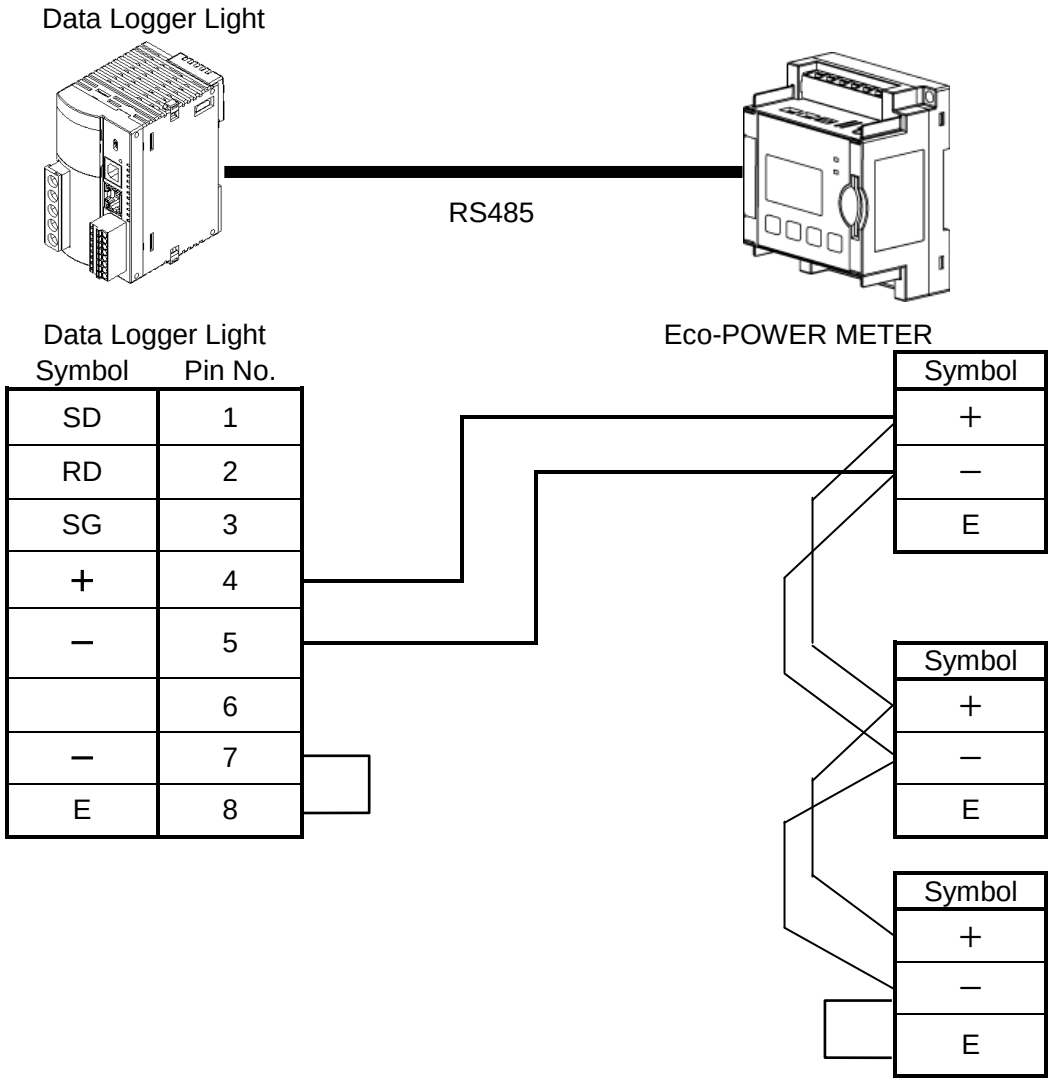
After these commands are executed, the latest data may not be recorded by RETR command. This occurs when it obtains file before creating file by RETR command. Be caution after obtaining by these commands.

Chapter 10 Example of Connecting to Data Logger Light

There are some representative examples of connecting to Data Logger Light.

10.1 Connect Eco-POWER METER

Example of 1:n communication between Data Logger Light and Eco-POWER METER



With a terminal unit, RS485(−) and RS485(+) should be shorted.

■Setting

Data Logger Light

COM2(RS485)	
Usage	Data collection
Baud Rate	19200bps
Data length	8-bit
Parity	Odd
Stop bit	1-bit
Timeout (sec.)	5

Eco-POWER METER

RS485	
Protocol	MEWTOCOL
Unit No.	1
Baud Rate	19200bps
Transmission format	8bit-o
Response time setting mode	1ms

Point

Refer to User's manual in details of Eco-POWER METER.

10.2 Connect Visualization Software

Connecting our visualization software enables you to look at data collected by Data Logger Light. However, note that there is some software you cannot use.

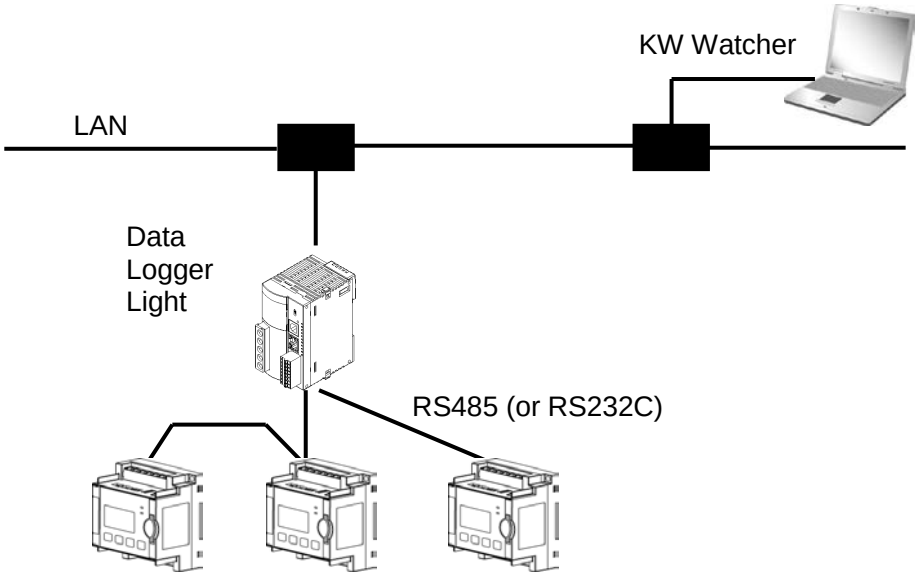
Name	Description	Availability
KW Watcher	Electric power monitoring software	Available
KW Monitor	Data collection software for Eco-power Meter	Not available
KW View	Energy consumption displaying software for KW1M-H	Not available
KW Network Monitor	Checking software for wireless network	Not available
Configurator DL	Application software for Data Logger Light	Available
PCWAY	Operation data collection software	Available *1

*1 It cannot be connected to Eco-power meter or PLC via Data Logger Light.

10.2.1 KW Watcher

You can monitor the electric power simply by download logging data in Data Logger Light with our electric power monitoring software “KW Watcher”.

[Ex.]



Eco-POWER METER / Wireless sensor

Setup of Data Logger Light

In case of using “KW Watcher”, set Data Logger Light as below.

Item		Contents
Logging file setup	Logging cycle	Select from 15 min., 30min., 60 min.
	Update by trigger	00:00:05
Logging device	Device	DT100 (Integrated electric power)
	Data style	DEC2W(No code)
	Logging contents	Inst.value
	Conversion value	0.01
Configuration	When there are vacant rows with logging device registration.	Record by left aligned (recommend)
	Record date and time	Record separately.
	Set file name	Check all boxes.
	Make the destination folder name of logging file [CF].	Check box.

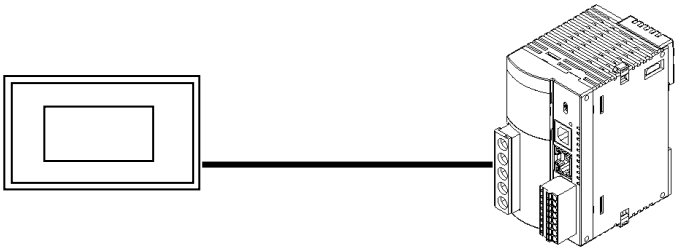
Point

- It is easy to setup “Logging file setup” and “Logging device” by using “Easy-setup”. (Refer to 6.1.5)
- Be sure to check box of “Make the destination folder name of logging file [CF]” at Configuration. It sets the above value at initial except this item. If you don’t change the setup, use as it is.
- As to the setup and details of KW Watcher, refer to “Electric Power Monitoring Software (KW Watcher) Operational Guide Book”.

10.2.2 Connect Programmable Display

By connecting Data Logger Light to a programmable display (GT series), the data (current value) that Data Logger Light saves is displayed on the programmable display.
Current value of logging data in Data Logger Light is saved in data registers (DT0 to 15999) of Data Logger Light.

Reference
About data registers (DT) <Chapter 11 Register>



Set the RS232C/485 port (COM1 or COM2) to “Computer link” and adjust the transmission conditions such as transmission speed etc.

Note
When setting the programmable display and Data Logger Light via RS485, set “transmission delay” for the programmable display using GTWIN.
GTWIN menu “file -> Configuration -> GT Configuration”
Click “Communication Parameters” and set “Transmission Delay”.

Reference
<GT series General-purpose serial communication Manual ARCT1F356E>
<GTWIN Help>

Note
It is not supported to connect PLC via PCWAY or Data Logger Light (FPWIN GR etc.).

Chapter 11 Registers

11.1 Internal Relay・Register

11.1.1 Data registers

The following data registers (DT) are used for Data Logger Light.
The current values of the data that Data Logger Light stores are reflected in DT0 to DT15999.
These registers can be read and written by MEWTOCOL.
(It doesn't support MODBUS.)

File No.	Registration No.	Register starting No.	DT range
1	1	DT0	DT0 to DT999
	2	DT2	
	. . .		
	300	DT598	
2			DT1000 to DT1999
3			DT2000 to DT2999
4			DT3000 to DT3999
5			DT4000 to DT4999
6			DT5000 to DT5999
7			DT6000 to DT6999
8			DT7000 to DT7999
9			DT8000 to DT8999
10			DT9000 to DT9999
11			DT10000 to DT19999
12			DT11000 to DT11999
13			DT12000 to DT12999
14			DT13000 to DT13999
15			DT14000 to DT14999
16	1	DT15000	DT15000 to DT15999
	2	DT15002	
	. . .		
	300	DT15598	

Note

・One file contains 300 registers. The others are reserved registers.
The file, that is set to available to collect DEC4W data, contains 150 registers.
・2-word data register is occupied regardless the logging device type.
4-word data register is occupied regardless the logging device type for the file that is set to available to collect DEC4W data.
-Contact information: use 2-word are, ON or OFF for lowest bit
-16-bit information: use 2-word area, data is stored in lower word.
(0 is stored in upper 1-word.)

Reference

<7.2.14 Configuration >

11.1.2 Special Internal Relay (R)

The following special internal relays are used for Data Logger Light.
These relays can be referred by MEWTOCOL.
(It doesn't support MODBUS.)

Relay No.	Name	Description
R9000	Self-diagnostic error flag	Turns on when a self-diagnostic error occurs.
R901D	2-sec clock pulse relay	Clock pulse of 2-sec cycle
R9020	RUN mode flag	Turns off while mode change switch is set to STOP. Turns off while mode change switch is set to RUN.
R9027	Remote flag	Turns on when mode can be changed RUN and STOP by remote operation.
R9029	SD memory card error flag	Turns on when an error occurs while accessing SD memory card.
R902A	SD memory card cover open/close flag	Turns on when SD memory card cover is closed. Turns off when SD memory card cover is opened.
R902B	SD memory card detection flag	Turns on when SD memory card is inserted. Turns off when SD memory card is not inserted.
R999D	Initialize setup data complete flag	Turns on when it completes to write the setup data. *After completing to write, it turns off by system reboot.

Reference
<7.2.14 Configuration >

11.1.3 Special Data Register (DT)

The following special data registers are used for Data Logger Light.
These registers can be read and written by MEWTOCOL.
(It doesn't support MODBUS.)

R: Read W: Write

Register No.	Name	Description	R/W
DT90000	Self-diagnostic error code	Stores error code when self-diagnostic error happens.	R
DT90028	Number of SD memory card writing (lower)	Counts number of writing to SD memory card.	R/W
DT90029	Number of SD memory card writing (higher)		
DT90030	Accumulated number of SD memory card writing (lower)	Counts accumulated number of writing to SD memory card.	R/W
DT90031	Accumulated number of SD memory card writing (higher)		
DT90054	Clock/calendar setting (minute/second)	The year, month, date, hour, minute, second and day data for calendar timer is stored. The built-in calendar timer will operate correctly through the year 2099 and support leap years.	R/W
DT90055	Clock/calendar setting (date/hour)		
DT90056	Clock/calendar setting (year/month)		
DT90057	Clock/calendar setting (day)		

	Higher byte	Lower byte
DT90054	Minute data (H00 to H59)	Second data (H00 to H59)
DT90055	Date data (H01 to H31)	Hour data (H00 to H23)
DT90056	Year data (H00 to H99)	Month data (H01 to H12)
DT90057		Day data (H00 to H06)

DT90062	COM1 scan time (lower)	Stores current value of a time to be taken for the data logging through COM1. (msec)	R
DT90063	COM1 scan time (higher)		
DT90064	Minimum of COM1 scan time (lower)	Stores the minimum value of a time to be taken for the data logging through COM1. (msec)	R
DT90065	Minimum of COM1 scan time (higher)		
DT90066	Maximum of COM1 scan time (lower)	Stores the maximum value of a time to be taken for the data logging through COM1. (msec)	R
DT90067	Maximum of COM1 scan time (higher)		
DT90070	COM1 number of unit no. mismatch	Counts the number of times that the transmitted unit number and the received unit number is mismatched when gathering data with COM1.	R
DT90082	COM2 scan time (lower)	Stores current value of a time to be taken for the data logging through COM2. (msec)	R
DT90083	COM2 scan time (higher)		
DT90084	Minimum of COM2 scan time (lower)	Stores the minimum value of a time to be taken for the data logging through COM2. (msec)	R
DT90085	Minimum of COM2 scan time (higher)		
DT90086	Maximum of COM2 scan time (lower)	Stores the maximum value of a time to be taken for the data logging through COM2. (msec)	R
DT90087	Maximum of COM2 scan time (higher)		
DT90090	COM2 number of unit no. mismatch	Counts the number of times that the transmitted unit number and the received unit number is mismatched when gathering data with COM2.	R
DT90102	Scan time (file creation)lower	Stores a time to be taken for file creation. (msec)	R
DT90103	Scan time (file creation) higher		
DT90110	Scan time (trigger) lower	Stores scan time for trigger monitor task (msec)	R
DT90111	Scan time (trigger) higher		
DT90112	Minimum of scan time (trigger) lower	Stores minimum scan time for trigger monitor task. (msec)	R
DT90113	Minimum of scan time (trigger) higher		
DT90114	Maximum of scan time (trigger) lower	Stores maximum scan time for trigger monitor task (msec)	R
DT90115	Maximum of scan time (trigger) higher		
DT90120	Scan time (main) lower	Stores scan time for application main task msec)	R
DT90121	Scan time (main) higher		

Register No.	Name	Description	R/W
DT90122	Minimum of scan time (main) lower	Stores minimum scan time for application main task. (msec)	R
DT90123	Minimum of scan time (main) higher		
DT90124	Maximum of scan time (main) lower	Stores maximum scan time for application main task (msec)	R
DT90125	Maximum of scan time (main) higher		
DT90131	COM1 error code	Stores COM1 error code ＊1	R/W
DT90132	COM2 error code	Stores COM2 error code ＊1	R/W
DT90135	File error code	Stores file error code ＊1	R/W
DT90140	Network initialization error code	Stores network initialization error code	R/W
DT90143	SMTP error code	Stores SMTP error code	R/W
DT90144	SNTP error code	Stores SNTP error code	R/W
DT90146	TCP1－MEWTOCOL error code	Stores TCP1－MEWTOCOL error code ＊1	R/W
DT90147	TCP2－MEWTOCOL error code	Stores TCP2－MEWTOCOL error code ＊1	R/W
DT90148	USB－MEWTOCOL error code	Stores USB－MEWTOCOL error code ＊1	R/W
DT90150	MAC address 1st word	Stores MAC address	R
DT90151	MAC address 2nd word		
DT90152	MAC address 3rd word		
DT90153	Software version	Stores firmware version ＊2	R
DT90154	IP address lower	Stores IP address ＊3	R
DT90155	IP address higher		
DT90156	Subnet mask lower	Stores subnet mask ＊3	R
DT90157	Subnet mask higher		
DT90158	Gateway lower	Stores gateway ＊3	R
DT90159	Gateway higher		
DT90160	Primary DNS lower	Stores primary DNS ＊3	R
DT90161	Primary DNS higher		
DT90162	Secondary DNS lower	Stores secondary DNS ＊3	R
DT90163	Secondary DNS higher		
DT90170	Representative number of available record lower	Stores number of available record in SRAM (Minimum record number)	R
DT90171	Representative number of available record higher		
DT90200	Total capacity of RAM disc 1st word	Stores total capacity of RAM disc 64-bit integer (MSB) [1st word | 2nd word | 3rd word | 4th word]	R
DT90201	Total capacity of RAM disc 2nd word		
DT90202	Total capacity of RAM disc 3rd word		
DT90203	Total capacity of RAM disc 4th word		
DT90204	Remain capacity of RAM disc 1st word	Stores remain capacity of RAM disc 64-bit integer (MSB) [1st word | 2nd word | 3rd word | 4th word]	R
DT90205	Remain capacity of RAM disc 2nd word		
DT90206	Remain capacity of RAM disc 3rd word		
DT90207	Remain capacity of RAM disc 4th word		
DT90208	Total capacity of SD memory card 1st word	Stores total capacity of SD memory card 64-bit integer (MSB) [1st word | 2nd word | 3rd word | 4th word]	R
DT90209	Total capacity of SD memory card 2nd word		
DT90210	Total capacity of SD memory card 3rd word		
DT90211	Total capacity of SD memory card 4th word		
DT90212	Remain capacity of SD memory card 1st word	Stores remain capacity of SD memory card 64-bit integer (MSB) [1st word | 2nd word | 3rd word | 4th word]	R
DT90213	Remain capacity of SD memory card 2nd word		
DT90214	Remain capacity of SD memory card 3rd word		
DT90215	Remain capacity of SD memory card 4th word		
DT90220	Reset software	Write A5A5 via Hex4, it will re-start.	R/W

Reference

*1: <12.3 Error code>

*2: higher 8 byte: Major version lower 8 byte: Minor version

Ex.) Ver.1.23 Major version: 1

Minor version: 23

*3 Ex.) 192.168.1.5 lower: 0x0105 higher: 0xC0A8

*Port number: <7.2.14 Configuration>

Chapter 12 Self-diagnostic and Troubleshooting

12.1 Self-diagnostic Function

12.1.1 LED Display for Status Condition

■Status indicator of LED

Data Logger Light has the self-diagnostic function that identifies errors and stops operation if necessary. When an error occurs, the status indicator LED shows as below.

	LED			Description	Status
	MODE	TRIGGER	ERROR		
Normal	○	×	×	RUN mode	RUN
	○	○	×	RUN mode(Trigger occurs)	RUN
	△	×	×	STOP mode	STOP
Error	○	×	○	RUN mode(Self-diagnostic error occurs) 1)	RUN
	○	×	△	RUN mode(Self-diagnostic error occurs) 1)	RUN
	○	○	○	RUN mode (Trigger and self-diagnostic errors occur)	RUN
	△	×	○	STOP mode (Self-diagnostic error occurs)	STOP
Special	○	○	○	System initialization Note2)	STOP
	×	×	×	Filing Note3)	STOP
	×	×	△	Waiting for firmware update Note4)	STOP
	○	△	○	Firmware updating	STOP

○:ON △:Flashed ×:OFF

*1 Error LED is blinking at ‘Capacity error’, ‘Device error’, ‘Write protect error’.
Error LED is lighting at the other errors.
*2 It is the operation to initialize the system when turning on the power supply.
*3 It is the operation to file the data that has not been filed when changing the mode.
*4 The waiting state for update as firmware is abnormal when turning on the power supply.

■If ERROR LED is ON or Flashed

●Procedure

Click “Status view” icon and you can check the contents of error.
Also, the history of error occurrence can be confirmed by referring the system history file.

Reference
<12.3 Error code >

12.2 Troubleshooting

■SD memory card

Condition	Cause	Action to take
When inserting SD memory card, the access LED does not light on.	SD memory card is not installed correctly. Or SD memory card cover is not closed correctly.	Remove SD memory card and insert it securely again and close cover. Then, check whether access LED lights on or not.
	SD memory card is not formatted. Or the format is not correct.	Use the format software that is downloaded from Panasonic HP. ＊Data in SD memory card is deleted all when it is formatted.
	SD memory card is damaged.	Check the SD memory card is recognized (mounted) by connecting PC etc. If it is not recognized, contact the manufacturer of the SD memory card.
Data cannot be saved in SD memory card.	SD memory card is not recognized.	Check that the access LED is ON or OFF. If it is OFF, refer to the description of “When inserting SD memory card, the access LED does not light on.”
	Destination to save data is selected as the internal memory.	Select “SD memory card” for the destination to save. (Refer to 7.2.3）
	Available capacity of SD memory card is low.	Remove SD memory card and delete the unnecessary data or use the other SD memory card with enough capacity.
	SD memory card is locked.	Check whether the SD memory card is locked or not.
	Setting for the number of saved file is over.	Check setting for operation when the number of saved file is over at logging file setup.

■Time adjustment

Condition	Cause	Action to take
Time cannot be updated.	Ethernet cable or USB cable is disconnected.	Connect Ethernet cable correctly.
	IP address to be connected is not correct.	Check IP address of SNTP server.
Updated time is wrong.	Time zone is not correct,	Set time zone correctly.

■Mail

Condition	Cause	Action to take
Cannot send a mail	Ethernet cable is disconnected.	Connect Ethernet cable correctly.
	Setting for SMTP server is not correct.	Set IP address of SMTP server correctly. When SMTP server is specified with a name, check if IP address setting for DNS server is correct.
	Destination mail address is not set correctly.	Set the destination mail address correctly at user registration window.
	Source mail address is not corrected.	Depending on mail servers, the source mail address may be checked. Set the source mail address correctly at “Mail setup”.
	Destination is not selected.	Check if the destination is selected or not.
Cannot send a mail by creating a file	Sending setting is not correct.	Set “Send by attaching to mail” and ”Destination” correctly at “Logging file setup”.

■Low-level communication

Condition	Cause	Action to take
Although a command has been transmitted, no response is received.	Your machine is not wired with the other machine correctly.	In case of RS232C Connect SD/RD lines of your machine to RD/SD lines of the other machine respectively. In case of RS485 Connect the transmission cable between the (＋) transmission terminals and between the (－) transmission terminals of each device. Also connect the terminal station correctly. Check the transmission cable specs is within the specifications. *Use one type of transmission cable in the same link. Do not mix more than one type.
	Communication conditions of your machine and the other machine are not matched.	Check the communication conditions of ”COM” at “RS232C/485 setup”
	Collecting command sending cycle may be short.	When connecting a wireless device, it may occur communication error because the command sending cycle is too short.
	The same unit number may be used for destination devices.	Check the unit number settings of destination devices.
Cannot collect data of KW2G.	The unit number setting of DLL may be wrong.	One unit number is allocated to one base unit even if an expansion unit is connected.
	Designate DT500 for collecting with using the wireless unit.	When using the wireless unit, DT500 is used for abnormal flag. Set DT520.

■FTP

Condition	Cause	Action to take
Cannot connect via FTP	Ethernet cable is disconnected.	Connect Ethernet cable correctly.
	Connected IP address is not correct.	Check IP address at LAN port setup->IP address.
	Security function is enabled.	Cancel security function or use PASV mode.
Cannot login	User name or password is not correct.	Check the user name and password. If you forget the password, set password again at the user registration.
	Another user logs in.	After a while, access again.
Although a connection is established, it fails in the file operation. (such as that a list is not displayed.)	FTP tool software used is not supported.	Use another FTP tool software or FTP pre-installed in Windows (operate by command prompt) for file operation.

■USB cable

Condition	Cause	Action to take
Cannot read or write setting data via USB	USB driver may not be properly installed.	Check if PC used recognizes USB driver, or uninstall the driver and then install it again.

12.3 Error Code

12.3.1 Hard error code

■Hard error code

No.	Name	Status	Error contents and action to take
E0026	ROM error	STOP	Probably a hardware abnormality. → Please contact your dealer.
E0050	Battery error	RUN	Voltage of the backup battery lowered or the backup battery is not installed in the unit. → Check the installation of backup battery and then replace the battery if necessary.

12.3.2 Network error code

■Upper-communication error code

No.	Name	Error contents and action to take
E0005	DHCP discovery error (IP automatic acquisition error)	IP could not be acquired from DHCP server. It can't communicate with DHCP server. → Check that the network system has no error.
E0070	Server connection error	It could not connect to server. → Check that the network system has no error. Check that the server starts. Check that the IP address set correctly
E0071	Log-in error	It failed to log-in to FTP server. → Check that the network system has no error. Check the user name and password.
E0072	PASV mode shift error	It could not shift to PASV mode. → Check that the network system has no error.
E0073	Directory change error	It failed to change directory with FTP. → Check that the network system has no error.
E0074	Time out error	Response timeout occurred. → Baud rate may not match or cable may disconnect. Check the communication situation. If it is normal, reset the appropriate timeout period. Destination may be not found. Check setup for logging source, destination number, communication etc.
E0075	Sending error	It failed to upload with FTP. → Check that the network system has no error.

■Mail error code ([MAIL])

No.	Name	Error contents and action to take
E0049	Attached file error	Failed in attaching the file. → The file may be damaged. Format SD memory card.
E0051	No attached file	Failed in accessing the attached file. → The attached file may not be generated. Check that the file has been generated by displaying the logging file list with Configurator DL.
E0052	Attached file size error	Attached file size exceeds the allowable size. → Get the target file by displaying the logging file operation with Configurator DL.
E0053	MAIL DNS error (SMTP)	Failed in searching the name of DNS. → Check that IP of DNS server is specified correctly. Check that DNS server is working. Check that the domain name of SMTP server is set correctly.
E0054	MAIL DNS error (POP)	Failed in searching the name of DNS. → Check that IP of DNS server is specified correctly. Check that DNS server is working. Check that the domain name of POP server is set correctly.
E0057	MAIL configuration error	There are some errors in the setting. → Check that destination address, source address, SMTP server, IP, POP server and IP (when authentication) are set correctly.
E0058	MAIL send error	Failed in communication with SMTP server. → Check that IP of SMTP server is set correctly. Check that SMTP server is working. Check that authentication function of mail server conforms to the authentication function of this unit.
E0059	MAIL POP AUTH error	Failed in communication with POP server. → Check that an account or password required for POP authentication is set correctly. Check that POP server is working. Check that an authentication function of mail server conforms to the authentication function of this unit.

■**SNTP error code ([SNTP])**

No.	Name	Error contents and action to take
E0062	SNTP DNS error	Failed in searching the name of DNS. → Check that IP of DNS server is specified correctly. Check that DNS server is working. Check that the domain name of SNTP server is set correctly.
E0063	SNTP server IP error	There are some errors in the setting. → Check that IP of DNS server is specified correctly.
E0064	SNTP time configuration error	There are some errors in the setting. → Check that IP of DNS server is specified correctly.
E0066	SNTP send error	There are some errors in the setting. → Check that IP of DNS server is specified correctly. Check that SNTP server is working.
E0067	SNTP receive error	There was no response from SNTP server. → Check that SNTP server is working.
E0068	SNTP response error	Data obtained from SNTP server was error. → Check that SNTP server is working correctly.
E0069	Time conversion error	Time obtained from SNTP server was error. → Check that SNTP server is working correctly.

If a command is not transmitted within 5 seconds (Data Liger Light does not receive data within 5 seconds.) although a PC etc. has established the connection to transmit command (such as MEWTOCOL) to Data Logger Light, Data Logger Light will close this connection.

12.3.3 Communication error code

No.	Name	Error contents and action to take
E0040	BCC error	BCC error occurred. → Check the communication situation such as noise.
E0041	Format error	An abnormal response received from the destination unit. → Check the communication situation such as noise. In addition, when it communicates via RS485, the destination unit may have sent the response before Data Logger Light is ready for receiving data. Adjust the transmission waiting time of the destination unit. ∗When it communicates via RS485, Data Logger Light will be ready for receiving data after 2 letters since it has sent a command.
E0042	Not support	Destination unit does not support the sent command. → Check the command supported for the destination unit.
E0060	Parameter error	Specified data does not exist in the destination unit. → Check setting of register name.
E0061	Data error	Specified data does not exist in the destination unit. → Check setting of register number.
E0074	Time out error	Response timeout occurred. → Baud rate may not match or cable may disconnect. Check the communication situation. If it is normal, reset the appropriate timeout period. Destination may be not found. Check setup for logging source, destination number, communication etc.

12.3.4 File error code

No.	Name	Error contents and action to take
E0013	Access error (SD memory card access error)	It cannot access SD memory card. → Check if SD memory card is inserted into the unit or not. → SD memory card may be broken. Format it.
E0024	Too many open files	Access to file is competed. As there are too many open files, the appropriate file cannot be opened. → Close the unnecessary files. →Accesses to the same file from the upper system and from DLL are competed. Try again after some time.
E0025	Device error	Impossible to access to SD memory card → Format the SD memory card.
E0028	No memory	There is no available space in the device to write data. → Change SD memory card or delete some files to keep an available space.
E0029	Write protect error	Impossible to write → Check the write protect switch of SD memory card.

Chapter 13 Specifications

13.1 General Specifications

Rated operating voltage	100-240V AC	
Allowable operating voltage range	85-264V AC (85% to 110% of rated operating voltage)	
Rated frequency	50/60Hz common	
Allowable momentary power-off time	10ms	
Rated output voltage (Service power supply)	24V DC	
Output voltage range	21.6 to 26.4V DC	
Rated output current	0.2A *1	
Inrush current	Max. 30A	
Ambient temperature	-10 to +55 ℃	
Storage temperature	-25 to +70 ℃	
Ambient humidity	30 to 85% RH (at 25℃ non-condensing)	
Storage humidity	30 to 85% RH (at 25℃ non-condensing)	
Breakdown voltage	●Outer edge (case)－All terminals ●Between Insulated circuit ・Operating power supply terminals*2－Output power supply terminals ・Operating power supply terminals*2－RS232C/RS485 communication terminals ・Operating power supply terminals－F.G. terminals	AC1500V for 1minute*3
	●Between Insulated circuit ・Output power supply terminals－RS2332C/RS485 communication terminals ・RS232C communication terminals－RS485 communication terminals	AC500V for 1 minute*3
Insulation resistance	●Outer edge (case)－All terminals ●Between Insulated circuit ・Operating power supply terminals*2－Output power supply terminals ・Output power supply terminals*2－RS232C/RS485 communication terminals ・Operating power supply terminals－RS232C/RS485 communication terminals ・Operating power supply terminals－F.G. terminals ・RS232C communication terminals－RS485 communication terminals	Min. 100MΩ (at DC500V)
Vibration resistance	10 to 55Hz (1cycle/min) single amplitude : 0.375mm (10 min. on 3 axes)	
Shock resistance	98 m/s^2 or more, 4 times on 3 axes	
Noise immunity	1500V [P-P] with pulse width 50ns, 1μs (by noise simulator method)(AC power supply terminal)	
Operating condition	Free from corrosive gassed and excessive dust.	
Power consumption	Max. 230mA (at 100V AC)	
Weight	Approx. 200g (without battery)	

*1 If current load that exceeds the rating is connected continuously, it may cause damage.
When it detects that is shorted, Data Logger Light turns off.
*2 Include F.G.
*3 Cut-off current: 10mA (exclude protective varistor)

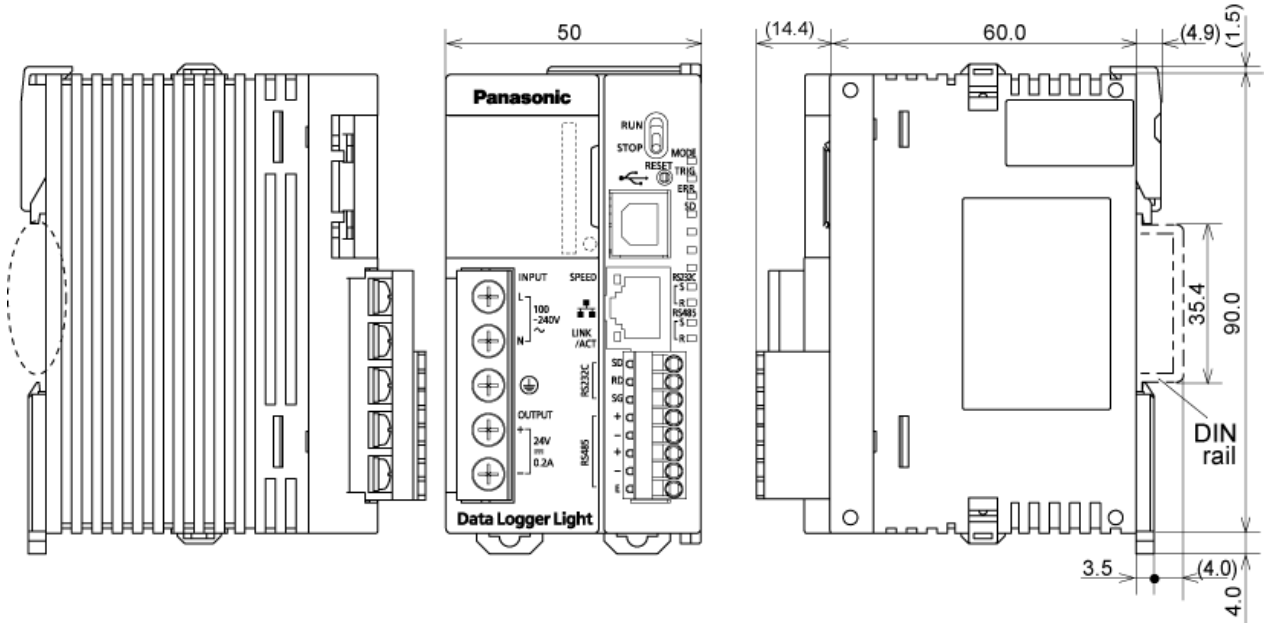
13.2 Performance Specifications

Data logging	Logging data	Items	Instantaneous value, Differential value, Average value, Minimum value, Maximum value
		Data format (Available in register system)	16-bit integer (signed / Unsigned), 32-bit integer (signed / Unsigned) HEX (4-digit / 8-digit), real number 64-bit integer (signed / Unsigned)
		Number of registerable files	16
		Registerable device *1	300 points / 1-file (no continuous registration)
	Data storage	Storage destination *2	・Internal memory (SRAM) : 1MB ・SD/SDHC memory card : 2 to 32GB
		File system	VFAT / FAT12 / FAT16 / FAT32
		Storage format	CSV
		Number of file storage	100
	Trigger	Trigger type	・Fixed cycle (appointed from the range of 1 sec to 24-hour) ・Contact status (Leading edge, Trailing edge, Both edge differential, Accumulated ON time, Total switching times, ON status, OFF status) ・Specified time (every minute, every hour, every week, every day, every month, every year, specified time) ・Register (＝, ＞, ＜, ≠) ・Combination of trigger (AND, OR)
		Number of registerable trigger	128
Others	Sending mail	Sending network	LAN
		Mail contents	Title : Max.16 letters Body text: Max. 254 letters
		Registerable number	64 (No attached file)
	Setting software	Configurator DL (Main unit setting software) *3	
Network function		Communication protocol	TCP / IP, UDP / IP
		Application protocol	SMTP (POP / APOP authentication), FTP (Client / Server), SNTP, DHCP, DNS
Calendar timer			25℃ Time accuracy: less than 70 seconds per month (Automatic correction by using SNTP is available.)
Backup			Logging data, calendar timer (By attached backup battery)
Battery discharge life (No power is supplied.) *4			2 years or more (Ambient temperature 25℃)
Security function			User name, Password (FTP server)
Self-diagnostic function			Watchdog timer, setting value check, battery voltage drop

*1 The number of registerable block is 300 in total, 16-file.
*2 Backup battery is available for backup the internal memory.
However, the data will disappear when the battery has gone.
*3 You can download Configurator DL by our website It is necessary our member registration. (Registration is free.)
*4 It is the discharge life after turning on electricity to the power supply of the main unit for 30 minutes.
The battery life is influenced by the environments such as temperature.

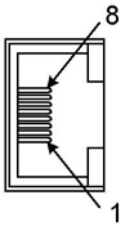
Chapter 14 Dimensions and others

14.1 Main Unit



14.2 Ethernet communication

■10BASE-T/100BASE-TX RJ45 connector



Pin No.	Signal name
1	TX+
2	TX-
3	RX+
4	Not used
5	Not used
6	RX-
7	Not used
8	Not used

14.3 BIN/HEX/BCD Codes

Decimal	Hexadecimal	Binary data	BCD data (4-digit) (Binary Coded Decimal)
0	0000	00000000 00000000	0000 0000 0000 0000
1	0001	00000000 00000001	0000 0000 0000 0001
2	0002	00000000 00000010	0000 0000 0000 0010
3	0003	00000000 00000011	0000 0000 0000 0011
4	0004	00000000 00000100	0000 0000 0000 0100
5	0005	00000000 00000101	0000 0000 0000 0101
6	0006	00000000 00000110	0000 0000 0000 0110
7	0007	00000000 00000111	0000 0000 0000 0111
8	0008	00000000 00001000	0000 0000 0000 1000
9	0009	00000000 00001001	0000 0000 0000 1001
10	000A	00000000 00001010	0000 0000 0001 0000
11	000B	00000000 00001011	0000 0000 0001 0001
12	000C	00000000 00001100	0000 0000 0001 0010
13	000D	00000000 00001101	0000 0000 0001 0011
14	000E	00000000 00001110	0000 0000 0001 0100
15	000F	00000000 00001111	0000 0000 0001 0101
16	0010	00000000 00010000	0000 0000 0001 0110
17	0011	00000000 00010001	0000 0000 0001 0111
18	0012	00000000 00010010	0000 0000 0001 1000
19	0013	00000000 00010011	0000 0000 0010 1001
20	0014	00000000 00010100	0000 0000 0010 0000
21	0015	00000000 00010101	0000 0000 0010 0001
22	0016	00000000 00010110	0000 0000 0010 0010
23	0017	00000000 00010111	0000 0000 0010 0011
24	0018	00000000 00011000	0000 0000 0010 0100
25	0019	00000000 00011001	0000 0000 0010 0101
26	001A	00000000 00011010	0000 0000 0010 0110
27	001B	00000000 00011011	0000 0000 0010 0111
28	001C	00000000 00011100	0000 0000 0010 1000
29	001D	00000000 00011101	0000 0000 0010 1001
30	001E	00000000 00011110	0000 0000 0011 0000
31	001F	00000000 00011111	0000 0000 0011 0001
:	:	:	:
63	003F	00000000 00111111	0000 0000 0110 0011
:	:	:	:
255	00FF	00000000 11111111	0000 0010 0101 0101
:	:	:	:
9999	270F	00100111 00001111	1001 1001 1001 1001

14.4 ASCII Codes

■ASCII Codes

b_7	b_6	b_5	b_4	b_3	b_2	b_1	b_0	C / R	0	1	2	3	4	5	6	7
				0	0	0	0	0	NUL	DEL	SPACE	0	@	P	`	p
				0	0	0	1	1	SOH	DC_1	!	1	A	Q	a	q
				0	0	1	0	2	STX	DC_2	″	2	B	R	b	r
				0	0	1	1	3	ETX	DC_3	#	3	C	S	c	s
				0	1	0	0	4	EOT	DC_4	$	4	D	T	d	t
				0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
				0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
				0	1	1	1	7	BEL	ETB	’	7	G	W	g	w
				1	0	0	0	8	BS	CAN	(	8	H	X	h	x
				1	0	0	1	9	HT	EM	)	9	I	Y	i	y
				1	0	1	0	A	LF	SUB	*	:	J	Z	j	z
				1	0	1	1	B	VT	ESC	+	;	K	[	k	{
				1	1	0	0	C	FF	FS	,	<	L	¥	l	|
				1	1	0	1	D	CR	GS	−	=	M	]	m	}
				1	1	1	0	E	SO	RS	.	>	N	^	n	~
				1	1	1	1	F	SI	US	／	?	O	_	o	DEL

Revision History

Issue Date	Manual no.	Content of revision
November, 2010	ARCT1F514E	First edition
March, 2011	ARCT1F514E-1	Second edition Easy-setup specifications addition
April, 2011	ARCT1F514E-2	Third edition <Add functions> ・Add setting item for RS232C/485 (retry setting) ・Add setting item for configuration (Logging data setting)
July, 2011	ARCT1F514E-3	Fourth edition ・Add note about KW2G on “Easy setting”.
September, 2011	ARCT1F514E-4	Fifth edition <Add functions> ・Add Communication protocol: MODBUS
April, 2012	ARCT1F514E-5	Sixth edition <Add functions> ・FTP retry function ・Simple setup IP address save function ・Prohibited letter for file name and device name <Change functions> ・Error code E0049 Attached file error E0050 battery error <Change initial value> ・RS232C/485 setup Logging command retry No->Yes ・Configuration Use most recent data for the accumulation data not available->Available <Add explanation and correct error> ・Chapter 9 Outline for MEWTOCOL communication Outline for FTP command ・Chapter10 Correct the drawings
August,2012	ARCT1F514E-6	Seventh edition <Add explanation and correct error> ・Registered port number is corrected to 1024 to 49151. (p.84) ・Chapter 12 Add time out error for the Upper-communication error code.

Issue Date	Manual no.	Content of revision
February,2014	ARCT1F514E-7	8th edition <Add functions> ・Below error codes are added. E0025 Device error E0029 Write protect error ・Supports Windows8 ・7.2.20 Registration list <Add explanation and correct error> ・Confirm the working of SD memory card ・Add items to system history file list
October, 2015	ARCT1F514E-8	9th edition <Add functions> Collect 64-bit data Add 'Main unit' as an option for I/F communication at 'Logging device registration' Add '1,2,3,4' as options for FTP retry interval Add resister for software reset <Change initial value> ・Configuration 'Check battery voltage': from No to Yes <Add explanation and correct error> ・Sending interval of command for collecting ・Corrective action for lower communication.

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Specifications are subject to change without notice.

ARCT1F514E-8